Collection of Native North American Indian Books, Historical Books, Atlases, plus other important authors and family heirloom books.
As of 12-31-93

Earl Ford McNaughton

WEATHER MAKING, ANCIENT AND MODERN.[1]

Check 1895

By Mark W. Harrington.

The subject of ancient and modern weather making is a very large one—too large to be treated with entire generality. I shall discuss it rather from the American standpoint, and shall use cases in the Old World simply for the purpose of illustration and for completeness.

Three distinct sorts of weather making have been employed. The first depends on superstitious and religious methods; then follows on this the degradation of these religious ideas into folklore remnants, which have a curious persistency in civilized countries. Both these are psychic. Opposed to them is the third method, mainly American and intensely practical, with which some history and literature are connected.

I.—Superstitious and Religious Methods.

RAIN MAKING AND STOPPING.[2]

Many Indian tribes have attempted to produce rainy or dry weather, according to requirements. Among these may be mentioned the Mandan, the Muskingum, the Moqui, the Natchez, Zuñi, Choctaws, and others. For this purpose pipes were smoked, tobacco was burned, prayers and incantations were offered, arrows were discharged toward the clouds, charms were used, and various other methods were employed. Classifying by tribes the processes employed, we turn first to the Iroquois.

Mrs. E. A. Smith, in her Myths of the Iroquois, says:

"In a dry season, the horizon being filled with distant thunder heads, it was customary to burn what is called by the Indians real tobacco as an offering to bring rain.

"On occasions of this nature the people were notified by swift-footed heralds that the children, or sons, of Thunder were in the horizon, and that tobacco must be burned in order to get some rain."[3]

---

[1] From the National Geographic Magazine, Vol. VI, pages 35–62, April 25, 1894.

[2] These cases of weather making among the North American Indians were collected for me by Dr. Fuller Walker, of the Weather Bureau, who searched through the literature available in Washington.

[3] Second Ann. Rep. Bureau of Ethnology for 1880–81 (1883), page 72.

As to the Muskingum, Heckewelder, in his Account of the Indians of Pennsylvania (Philadelphia, 1819, p. 229), says:

"There are jugglers, generally old men and women, who get their living by pretending to bring down rain when wanted, and to impart good luck to bad hunters. In the summer of 1799 a most uncommon drought happened in the Muskingum country (Ohio). An old man was applied to by the women to bring down rain, and, after various ceremonies, declared that they should have rain enough. The sky had been clear for nearly five weeks, and was equally clear when the Indian made this declaration; but about 4 o'clock in the afternoon the horizon became overcast, and, without any thunder or wind, it began to rain, and continued to do so until the ground became thoroughly soaked."

Heckewelder adds that "experience had doubtless taught the juggler to observe that certain signs in the sky and in the water were the forerunners of rain."

Among the Natchez, according to Father Charlevoix,[1] jugglers not only pretended to cure the sick, but also professed to procure rain and seasons favorable for the fruits of the earth. Their incantations were often directed to the dispersion of clouds and the expulsion of evil spirits from the bodies of the afflicted.

In the third report of the Bureau of Ethnology it is stated by J. Owen Dorsey that "when the first thunder is heard in the spring of the year the Elk people (among the Omaha Indians) call to their servants, the Bear people, who proceed to the sacred tent of the Elk gens. When the Bear people arrive one of them opens the sacred bag and, after removing the sacred pipe, hands it to one of the Elk men, with some of the tobacco from the elk bladder. Before the pipe is smoked it is held toward the sky, and the thunder god is addressed. - - - 'At the conclusion of this ceremony the rain always ceases, and the Bear people return to their homes.'"[2]

Catlin, in his "Life among the Indians" (p. 78), says that he found that the Mandan had "rain makers" and also "rain stoppers," who were respected medicine men "from the astonishing facts of their having made it rain in an extraordinary drought, and for having stopped it raining when the rain was continuing to an inconvenient length." He adds:

"For this purpose, in a very dry time, the medicine men assembled in the medicine lodge, and sitting around a fire in the center, from day to day smoking and praying to the Great Spirit for rain, while a requisite number of young men volunteered to make it rain. Each one of these, by ballot, takes his turn to mount to the top of the wigwam at sunrise in the morning, with his bow and arrows in his hand and shield on his arm, talking to the clouds and asking for rain, or ranting and threatening the clouds with his bow, commanding it to rain. After several days of unsuccessful attempts have passed off in this way with a clear sky, someone more lucky than the rest happens to take his stand on a day on which a black cloud will be seen moving up. When

[1] Voyage to North America, Dublin, 1776, Vol. II, page 203.

[2] Omaha Sociology, op. cit., 1884, page 227.

he sees the rain actually falling he lets his arrow fly, and pointing says: 'There! my friends, you have seen my arrow go. There is a hole in that cloud. We shall soon have rain enough.' When he comes down he is a medicine man. The doctors give him a feast and a great ceremony and the doctor's rattle. When the doctors commence rain making they never fail to succeed, for they keep up the ceremony until the rain begins to fall. Those who have once succeeded in making it rain in the presence of the whole village never undertake it a second time. They would rather give other young men a chance."

A similar account of the Mandan ceremony is given by Mr. John Frost in his book, "The Indians of North America" (New York, 1845, p. 109). He says:

"It was in a time of great drought that I once arrived at the Mandan village on the Upper Missouri. The young and the old were crying out that they should have no green corn. After a day or two the sky grew a little cloudy in the west, when the medicine men assembled together in great haste to make it rain. The tops of the wigwams were soon crowded. In the mystery lodge a fire was kindled, around which sat the rain makers, burning sweet-smelling herbs, smoking the medicine pipe, and calling on the Great Spirit to open the door of the skies to let out the rain. At last one of the rain makers came out of the mystery lodge and stood on the top of it with a spear in his hand, which he brandished about in a commanding and threatening manner, lifting it up as though he were about to hurl it at the heavens. He talked loud of the power of his medicine, holding up his medicine bag in one hand and his spear in the other; but it was of no use, and he came down in disgrace. For several days the same ceremony continued, until a rain maker with a headdress of the skins of birds ascended the top of the mystery lodge, with a bow in his hand and a quiver at his back. He made a long speech, for the sky was growing dark, and it required no great knowledge of the weather to foretell rain. He shot arrows to the sunrise and sundown points of the heavens and also to the north and south, in honor of the Great Spirit, who could send rain from all parts of the sky. A fifth arrow he retained until it was almost certain that rain was at hand. Then sending up the shaft from his bow with all his might to make a hole in the dark cloud over his head, he cried aloud for the waters to pour down at his bidding and to drench him to the skin. He was brandishing his bow in one hand and his medicine in the other, when the rain came down in torrents."

Among the Blackfeet Indians, according to W. P. Clark, in his "Indian Sign Language" (Philadelphia, 1885, p. 72)—

"The medicine man has a separate lodge, which faces the east. He fasts and dances to the sun, blowing his whistle. He is painted in different colors, and he must have no water, and only after dark can he eat, and then only the inner bark of the cottonwood tree. A picture of the sun is painted on his forehead, the moon, Ursa Major, etc., on his body. The dance continues for four days, and should this medicine man drink it is sure to cause rain, and if it [does not] rains no other evidence of his weakness is wanted or taken. He is deposed as high priest at once."

Mr. W. Noble, of Indian Territory, says that "the Choctaws, during a severe drought, will fasten a fish to one of their number, who then goes into the water and remains there every day for two weeks in order

to cause it to rain." He adds that "in wet weather, if they wish the rain to cease, they go to a sand bank, put sand in a pan, and dry it over a fire."

Among the Moqui, according to Schoolcraft—

"There is a charm used for calling down rain. It consists of a small quantity of wild honey wrapped up in the inner fold of the husk of the maize. To produce the effect desired it is necessary to take a piece of the shuck which contained the wild honey, chew it, and spit it upon the ground which needs the rain."[1]

Capt. J. G. Bourke, in his "Snake dance of the Moqui" (p. 120), says:

"There was painted on the east wall a symbolical design, or 'prayer,' representing three rows of clouds in red and blue, from which depended long, narrow, black and white stripes, typical of rain, while from right and left issued long red and blue snakes, emblematic of lightning. This was a prayer to the god of clouds to send refreshing rains upon the Moqui crops. - - - Yellow was used in all prayers for pumpkins, green for corn, and red for peaches."

Among the Zuñi, according to Stevenson, medicine sticks were supposed to influence rain. These little sticks are found hidden beneath the rafters of nearly every house in Zuñi.[2]

Passing a little farther from home we find, in Acosta's "History of the Indies,"[3] some accounts of rain producing and weather making among the Peruvian natives. According to him a Peruvian king in his lifetime caused a figure to be made wherein he was represented, which they called Huaugue, which signifies brother. They carried this image to the wars and in procession for rain or fair weather, making sundry feasts and sacrifices to it. They also pursued other methods. "In matters of importance they offered up alpacas, hanging the beast by the right fore leg, turning his eyes to the sun, speaking certain words according to the quality of the sacrifice they slew, for if it were of color their words were addressed to the god of thunder and lightning, that they might want no water" (p. 341). If they wanted water, to procure rain they set a black sheep tied in the middle of a plain, pouring much chica about it, and giving it nothing to eat until it rained (p. 376). This is practiced (says Acosta, 1571–1588) at this day in many places in the month of October.

OTHER WEATHER MAKING.

What precedes relates to rain making or stopping. A somewhat similar series of facts occur among the American Indians concerning other elements of the weather, but their energies in this direction seem to be expended chiefly in the control of the winds.

It appears that the Kansas gens of the Omaha are Wind people, and to them is especially intrusted the control of the wind. Mr. J. Owen

---

[1] "History," etc., Vol. III, page 208.

[2] Second Ann. Rep. Bureau of Ethnology, page 371.

[3] Hakluyt Society edition, Vol. II, pages 312, 313.

Dorsey says the Kanze (Kansa or Kaw) gens of the Omaha tribe, being Wind people, "flap their blankets to start a breeze."[1] He adds that when there is a blizzard the other Kansa tribe of Indian Territory beg the members of the Wind gens to interpose, saying, "O grandfather, I wish good weather. Cause one of your children to be decorated." Then the youngest son of a Kanze man, say one about 4 feet high, is chosen for the purpose, and painted with red paint. The youth rolls over and over in the snow, reddening it for some distance all around him. This is supposed to stop the blizzard.

The following account is from a book entitled The Fourteen Ioway Indians (London, 1844), and relates to raising wind:

"A packet ship with Indians on board, was becalmed for several days near the English coast. It was decided to call upon the medicine man to try the efficacy of his magical powers with the endeavor to raise the wind. After the usual ceremony of a mystery feast, and various invocations to the spirit of the wind and ocean, both were conciliated by the sacrifice of many plugs of tobacco thrown into the sea, and in a little time the wind began to blow, the sails were filled, and the vessel soon wafted into port."

The Indians also have many associations with thunder. Madam Lucy Elliot Keeler, in a paper recently contributed to the American Agriculturist for December, 1892, says:

"The Dakotas used to have a company of men who claimed the exclusive power and privilege of fighting the thunder. Whenever a storm which they wished to avert threatened, the thunder fighters would take their bows and arrows, their magic drum, and a sort of whistle made of the wing bone of a war eagle, and, thus armed, run out and fire at the rising cloud, whooping, yelling, whistling, and beating their drum to frighten it down again. One afternoon a heavy black cloud came up, and they repaired to the top of a hill, where they brought all their magic artillery into play against it; but the undaunted thunder darted out a bright flash which struck one of the party dead as he was in the very act of shaking his long-pointed lance against it. After that they decided that no human power could quell the thunder."

In the Pawnee Hero Stories and Folk-tales, published by George Bird Grinnell, we find the following:

"An old Pawnee Indian said: 'Up north where we worshipped at the time of the first thunder we never had cyclones. Down here [Indian Territory], now that this worship has been given up, we have them.'"

The Indians in some cases have ideas of controlling the weather more generally, and Dablin, in his Relation of the Voyages, Discoveries, and Death of Father James Marquette,[2] writing in 1671–1675, says:

"It now only remains for me to speak of the calumet, than which there is nothing among the Indians [i. e., the Illinois] more mysterious or more esteemed. - - - They esteem it particularly because they regard it as the calumet of the sun, and in fact they present it to him to smoke when they wish to obtain calm, or rain, or fair weather."

---

[1] Third Ann. Rep. Bureau of Ethnology, page 241.

[2] Hist. Coll. of Louisiana, Part IV, 1852, pages 34, 35.

Even the control of fog has been attempted, as shown by the following quotation from Dorsey's account of the Turtle subgens of the Omaha:[1]

"In the time of a fog the men of this subgens drew the figure of a turtle on the ground with its face to the south. On the head, tail, middle of the back, and on each leg were placed small pieces of a (red) breech cloth, with some tobacco. This they imagined would make the fog disappear very soon."

But it is not only the pagan Indians who have tried their hand at weather making. Their Christianized descendants have also tried to control these operations of nature. In the transition times between paganism and Christianity occurred some events which throw a curious and instructive side light on this question, and two of these I will now give.

Mr. Parkman says that while the Jesuits labored with the Hurons a severe drought came upon the fields. The sorcerers put forth their utmost power, and from the tops of the houses yelled incessant invocations to the spirits. All was in vain. A renowned "rain maker," seeing his reputation tottering under his repeated failures, bethought him of accusing the Jesuits, and gave out that the red color of the cross which stood before their house scared away the bird of thunder and caused him to fly another way. On this a clamor arose. The popular ire turned against the priests, and the obnoxious cross was condemned to be cut down. The Jesuits said: "If the red color of the cross frightens the bird of thunder, paint it white." This was done, but the clouds still kept aloof. The Jesuits followed up their advantage. "Your spirits can not help you. Now ask the aid of Him who made the world." Heavy rains occurring soon after, it is said that many Indians believed in the white man's Great Spirit and presented themselves to the priests for baptism (Alice Elliot Keeler).

A somewhat similar story is told of Peru by Acosta. It appears that the Santa Cruz Indians became Christians because of the success of a renegade soldier in making rain. This soldier, seeing the native Indians "in a great extremity for water, and that to procure rain they used many superstitious ceremonies, according to their usual manner," said to them that if they would do as he said they should presently have rain, which they willingly offered to perform. "Then the soldier made a great cross, which he placed on a high and eminent place, commanding them to worship it and to demand water, which they did. A wonderful thing to see, there presently fell such an abundance of rain, as the Indians took so great devotion to the holy cross as they fled unto it in all their necessities, and obtained all they demanded, so as they broke down their idols."[2]

The quotation from Acosta indicates the attitude of the Indians of middle latitudes on this subject. This attitude, as is well known to

[1] Third Ann. Rep. Bureau of Ethnology, page 240.

[2] Op. cit., Vol. II, page 524.

those familiar with the Latin-American countries, is preserved unchanged among their descendants. Interesting illustrations of it can be picked up any day even as far north as Arizona and New Mexico, and every traveler in Latin-America has several at his disposal. As the quintessence of them all I present a clipping from the New York Tribune, to which my attention was called by Dr. T. C. Mendenhall. Se non é vero é ben trovato. The extract runs as follows:

"In the department of Castañas there had been no rain for nearly a year, and the people were brought to such a pass that they were actually dying for thirst, to say nothing of the total destruction of all crops and other agricultural industries.

"El Pueblo Católico, of New San Savaldor, prints a number of resolutions promulgated by the principal alcalde of the town and department of Castañas. They are as follows:

"'Considering that the Supreme Creator has not behaved well in this province, as in the whole of last year only one shower of rain fell; that in this summer, notwithstanding all the processions, prayers, and praises, it has not rained at all, and consequently the crops of Castañas, on which depend the prosperity of the whole department, are entirely ruined, it is decreed:

"'Article 1. If within the peremptory period of eight days from the date of this decree rain does not fall abundantly, no one will go to mass or say prayers.

"'Art. 2. If the drought continues eight days more the churches and chapels shall be burned, and missals, rosaries, and other objects of devotion will be destroyed.

"'Art. 3. If, finally, in a third period of eight days it shall not rain, all the priests, friars, nuns, and saints, male and female, will be beheaded. And for the present permission is given for the commission of all sorts of sin in order that the Supreme Creator may understand with whom he has to deal.'

"The most remarkable feature of this affair is the fact that four days after these resolutions were passed the heaviest rainfall known for years was precipitated on the burning community."

II.—Folklore Remnants.[1]

Among the many curious remnants of folklore which we find in connection with the subject of weather making none is more curious than the idea that birds "call for rain." Whenever this expression is used the evident intention is, as is well known to those who are familiar with this mode of speech, to express the idea that they demand the rain, and that rain is likely to follow because of this demand. For instance, the call of the robin, heard so frequently, is interpreted to mean, "Bring out your skillet, bring out your skillet, the rain will fill it." In popular estimation this is a "call for rain." This association with our American robin is very general. In Maine and Massachusetts they are said to "sing for rain" (Miss F. D. Bergen). The

[1] This series of associations of natural objects with weather making in the sense of a weather fetich—a weather maker, not simply a weather forecaster—is taken from the collections of weather proverbs made by the Signal Service and Weather Bureau.

American quail is also said to "call for rain," and its cry is interpreted to be, "More wet, more wet" (Dr. Robert Fletcher). The call of the loon is given the same meaning in so widely separated localities as Cape Breton, the State of Washington, and Florida (Mr. C. A. Smith). The same power is attributed, generally in the Old World, to many other birds, as ducks, geese, crows, and ravens. From Pennsylvania (William Schrock) comes the quaint conception expressed in the following rhyme:

> The goose and the gander
> Begin to meander;
> The matter is plain,
> They are dancing for rain.

But the birds are not only effective in making rain; they can exert still greater influence. The kildee, or killdeer plover, is said, in Maryland, to call up the wind by his cry of "Kildee! kildee!" while to kill him would cause a violent storm (Dr. Fletcher). The Kiowa of Indian Territory attributes to the killdeer the bringing of spring (James Mooney, Washington).

Another popular association between animals and rain is the idea that by certain treatment of some animals definite results in the way of rain making can be obtained. For instance, on Santee River, in South Carolina, it is believed that if you catch an alligator, tie him to a tree, and whip him to death it will be certain to bring rain (Dr. W. W. Anderson). This seems to be a fragment of negro folklore. In Massachusetts it is said that if you see or step on a frog it is a sure sign of rain, while in Maine they say, "Kill a frog and it will rain before morning" (Miss F. D. Bergen). This association of rain with the toad is general over the United States. Still another folklore remnant of the same sort relates to snakes. It is a curious fact that among many races the snake is supposed to have some relations with the weather. Mr. James Mooney says, "The belief in a connection between rain and snakes is quite general among Indian tribes. The snake dance is intended to bring rain. The Indians of Indian Territory turn a dead snake on its back to bring rain." It is a piece of negro folklore that hanging a dead snake on a tree will bring rain in a few hours. Farther northward it runs, "Hang up a snake skin and it will bring rain." This refers to the cast-off skin. In northern Illinois the expression is, "Hang up a snake's cast-off skin on the crab-apple tree and it will bring rain." The snake has played a very important part in weather making, and to it has been attributed many other magical powers.

An interesting series of superstitions with reference to weather making are those which are common to sailors, who have a well-known half-serious belief that one can raise wind by whistling. In Newfoundland they say, "Stick a knife in the mainmast and whistle, and it must produce wind." In Newfoundland, also, they have an idea that if a vessel is becalmed wind can be produced by throwing over-

board a half-penny. Another notion, common also to the same sailors, is that if you put the end of the sheet overboard it will produce wind, and that if you hit it three times across the thwarts it will stop the rain. Mr. Kinahan, illustrating the sincerity of the belief in the power of whistling in raising wind, says: "In a dead calm you may whistle for wind, except in a dangerous place. Crossing from Skibbereen to Clear Island, County Cork, a friend of mine was very nearly getting into a row for inadvertently whistling." This belief is very general. In California sailors say that one may whistle softly for a breeze, but that it is dangerous to indulge in loud or thoughtless whistling as it may bring a gale. Here the skipper scratches the mizzenmast for a fair wind.

Sailors profess great confidence in the ability of the cat to raise the wind, and are accustomed to say that the cat carries the wind in her tail. Cats have the general reputation of being very weatherwise. On shipboard, especially, it is considered imprudent to provoke a cat, because she is assumed to have a certain share in the arrangement of the weather. Imprudence of this sort appears, however, to have no terrors for the Soudanese in western Java, for, when rain is needed, they form in procession with gongs and clappers, take their cats to the nearest streams, where the animals are sprinkled and bathed.[1]

Many sailors also have a very curious notion that hens' eggs on board ship produce contrary winds, and on the occurrence of such winds they are likely to insist that the eggs must be thrown overboard.

Another of these folklore remnants of sailors is the idea that there is a distinct relation between the albatross and wind. This superstition has been embalmed in most attractive form by Coleridge in his Lay of the Ancient Mariner. One stanza runs as follows:

> For all averred I had killed the bird
> That made the breeze to blow.
> Oh, wretch! said they, the bird to slay
> That made the breeze to blow.

In addition to the above folklore remnants there are some methods which are purely magical. The earliest reference of this sort which I have found is the case of Sópater. He is said to have caused a horrible famine in Asia Minor by "chaining the winds." He was put to death by Constantine—probably for this reason, as this crime was forbidden by the laws of the Twelve Tables, as well as later in the Theodosian code.

The association of weather making with the witches in Finland is familiar. Steele, in his Medieval Lore, from Bartholomew Anglicus (about 1260), referring to the people in Finland, says:

"The men - - - occupy themselves with witchcraft, and so to men that sail by their coasts, and also to men that abide with them for default of wind; they prefer wind to sailing, and so they sell wind.

[1] Forbes. Eastern Archipelago, page 75.

They used to make a clue [skein] of thread, and they make divers knots to be knit therein, and then they command to draw out of the clue to three knots, more or less, as they will have the wind more soft or strong; and for their misbelief fiends move the air and arise strong tempests, or soft, as they draweth of the clue more or less knots; and sometimes they move the wind so strongly that the wretches that believe in such doings are drowned by the rightful doom of God."

The elder bush is especially associated with weather making. The witches were thought to make bad weather by stirring water with branches of the elder.

Still another remnant of ancient superstition is, according to Aubrey (1696), to the effect that "On Malvern Hills, in Worcestershire, and thereabouts, when they farm their corn and want wind they cry 'Youle! youle! youle!' to invite it, which word, no doubt, is a corruption of Æolus, the god of the winds." (Dr. R. Fletcher.)

III.—Physical Methods.

WEATHER MAKERS.

What precedes relates to purely psychic methods of controlling the weather or the elements. The collection which it presents has been made in no spirit of disrespect, but solely in that of the collection and scientific comparison of facts. I have great respect for all sincere religious belief and great interest in folklore remnants—fragments of what have once been great psychic structures—ruins about the tombs of the ancients. What follows is intensely fin de siècle and treats of the paradoxer in a well-developed stage. The paradoxer deserves a respect to be measured by the sufficiency of his information and the correctness of his logic. He is a possible benefactor of the world, a potential great man. Galileo was a paradoxer—very unwelcome to the Aristotelians of his time. Kepler was a rank paradoxer to his contemporaries, and Newton was a paradoxer to the Cartesians of his day.

Time will not be spent on rash paradoxers in the field of weather making. We shall only consider those who have some such guarantee as a patent, an appropriation, or genuine learning. As an illustration of the rash paradoxers, I will simply mention two, one the man who proposed to destroy blizzards by a line of coal stoves along our northern boundary from Red River to the Continental Divide, and the other a man who proposed to ameliorate the weather of New England and the Canadian provinces by damming the Strait of Belle Isle.

WEATHER MAKING.

We pass first to the treatment for tornadoes. M. Weyher has made laboratory tornadoes of a mild and gentle character, but they contain no suggestion as to how to treat this pathologic phenomenon of the weather.

A treatment has been suggested, which is heroic and may possibly be effective. It is, however, a local application, and the chief difficulty is to have it ready when and where wanted. The method proposed is that of a great explosion in the tornado itself. Many plans have been suggested, and two patents have been granted. I will consider the first, that of Mr. J. B. Atwater, of Chicago (No. 370845, 1887). A strong box with a double bottom is firmly supported on a pole erected at a suitable point, probably a mile or so southwest of the village to be protected. The upper bottom is fixed, and the space above it is filled with an explosive and firmly closed. In holes in the upper bottom are inserted fulminating caps, and these project below its lower surface. The lower bottom slides up and down. Then, if a high wind drives the lower bottom against the upper with such force as to flash the caps, the explosion follows, and the tornado (if present) suffers the effects which a tornado will suffer when a powerful explosion occurs in its immediate vicinity.

What these effects will be we do not yet know. It is said, with enough repetition to make it fairly worthy of credence, that a cannon fired into a waterspout destroys the latter. If such a disturbance destroys the gentler waterspout, it may be worth while to try a larger one on the more intense tornado. Perhaps it will be effective; we can be more positive when it has been tried.

Many other schemes have been proposed for the control of the elements of the weather. Most of them have an objectionable side, notably in rain making, which can be pointed out here as well as elsewhere. It is this: The phenomenon to be produced probably can not be controlled as to area covered, and may occur where it is not wanted. If we are clothing merchants and I carry over too large a stock of winter clothing into late spring, I may order a cold wave to help me reduce my stock. But you may have exhausted your winter stock and wish to have warm weather to start your summer stock. My cold wave affects your trade seriously; I may be sued for damages. Such a state of things is said to have actually happened in Kansas, where a rain maker was refused payment by his employer because of failure of contract, and was sued by a neighbor of the employer because his crops were washed out of the ground. Should the weather maker prosper he will often find himself very much embarrassed until our lawmakers have caught up with our advance in the arts, and the volume of the statute books has been materially enlarged.

RAIN MAKING.

We come now to the subject of rain making, which has attracted more attention, been more tried, and has more history than any other one method of weather making. It has attained the dignity of at least two patents and two Congressional appropriations. A bibliography of the subject is appended, containing sixty-four titles, two of which refer to books devoted to this subject, by Power and Gathman, respectively.

First method.—To clear the way for the American history we may note here as method No. 1 a French method reported in the Comptes Rendus for October 23, 1893. M. Baudouin sent a note to the French Academy of Sciences in which he wrote that in Algeria, earlier in that year, he used a kite to obtain electric connection with a cloud at the height of about 4,000 feet. As soon as this connection was made a few drops of rain fell and a local fog formed. These disappeared on breaking the connection, presumably by withdrawing the kite from the cloud. M. Baudouin had obtained some rain in Algeria in 1876 by the same method. I know of no other experiments in this direction, nor do they involve anything in opposition to knowledge already acquired. It is a fair field for experiment, and it is remarkable that M. Baudouin's experiments have not attracted more attention in the United States.

Second method.—A second proposed method of obtaining rain is by means of great fires. With this proposal the name of a Pennsylvania meteorologist, James P. Espy, is inseparably connected. In 1841 he published a Philosophy of Storms, in which he enlarged on this idea previously propounded by him in occasional articles dating from 1838. The idea was not new, for Dobrizhoffer, a Jesuit missionary in South America, in his Account of the Abipones (first published in 1784), says that these Indians produced rain by setting fire to the plains. Indeed the idea has been and is generally entertained, and in the West has crystallized into the weather proverb, "A very large prairie fire will cause rain." To show something of the character of the testimony on which Espy relied we shall quote the story of George Mackay as given in a letter to Espy and printed by him in his Fourth Meteorological Report (pp. 32–34). Mr. Mackay says:

"In 1845 I was engaged in the public survey on the Atlantic coast of Florida. Sometime in April (the time of the dry season there, which lasts up to June) I was running a township line between latitudes 26° and 27°, about 5 miles from the sea. The weather was oppressively warm that day. There was not air enough stirring to move an aspen leaf. We found our line must pass through a saw-grass pond, containing about 500 acres. In ponds of this description the green grass at the top shoots up from 5 to 6 feet in height, and when the region has not been for some years swept clear by fires the dead and dry growths of preceding seasons accumulate under the latest growth, and are often found there from 2 to 4 feet in depth. They are exceedingly inflammable. When lighted in dry weather they burn with frightful rapidity and violence. Whenever, in our explorations, we came upon a place of this description we could only pass our line by cutting away the lofty fresh grass and wading (or rather wallowing) through the mud and the underrubbish. On the day in question we determined, as it was so hot, that to save ourselves trouble we would burn our way through. I had then no thought of your theory. In order to prevent the flames from running over the woods, through which we were obliged to pass, we communicated them at once to both sides of the spot we desired to open, that they might converge and combine in its center and not scatter latterally. In a very few minutes an awful blaze swept over the entire surface which we had marked out for our purpose.

We then crossed our line. Ere we had proceeded over 40 chains a delightful breeze sprang up and cooled the atmosphere, and presently a refreshing shower sparkled in the bright rays of the sun. All this excited no further observation than that it had not rained there before for a long time. I myself did not observe any smoke nor the formation of any cloud.

"Our work went on for some days without a repetition of our short cut at pioneering, some objection having been made when another burning was proposed, because the first one had rendered it difficult, after crossing the lines, to distinguish the white men from the negroes. At length, however, the pleasant breezes ceased, which had made the weather for a while endurable, and the still air and intense heat returned, and with them constant murmurs from the men, especially the negroes, whose duty it was to cut lines and mark trees. We were now on the confines of a saw-grass pond, and a much more formidable one than any we had yet encountered. Being surrounded by a cypress swamp, we concluded that it had never yet been burned. My assistant, Capt. Alexander Mackay, who was standing by my side, mentioned his having, in our late conflagration, observed the formation of a cloud at the apex of the smoke. He added that it had frequently since brought to his mind some account which he had read of Professor Espy's theory. He suggested that there could not be a better opportunity than this to put the theory to the test, and being fond of a joke, he said he would like to astonish the superstitious negroes and to make them believe that he could call together the clouds and bring down rain. So we determined to make the experiment.

"When our party was all gathered at the halting place complaints of the extreme heat went around, and all unanimously agreed that a more confined and oppressive day had never been known to them. To these complaints the usual wishes for 'a little breath of air' and 'a few drops of rain' succeeded. 'Cut through this pond,' exclaimed the Captain, 'and I will bring you more than a few drops of rain; I'll give you a plentiful shower and a breeze, too, that shall wake you up. Come, boys, cut away, and when you've done you shall wash off the dust in a cold bath from the skies.' They stared up and around; not a cloud as large as a man's hand was to be seen, and they looked back at the Captain with a good-natured grin of incredulity. 'Ho, ho! ha, ha! Captain make cloud out o' nuffin'; he, he! Captain bring water all dis way from de sea? Ho, ho! ha, ha! he, he!' Whereupon the Captain affected to be very indignant. To hasten his victory I ordered the grass to be set on fire. The flames soared forthwith above the tallest trees; a dense volume of smoke mounted upward spirally; the grass soon disappeared; we crossed over. As the smoky column broke and the cloud began to form, the Captain traced a large circle in the sand around him, and placed himself in its center, making fantastic figures and forming cabalistic phrases out of broken French. Still was the cloud unnoticed. All eyes were riveted upon the Captain, who stood gazing at the earth and shaping outlines of devils there. At this juncture came a roll of distant thunder. Every glance instantly turned upward; a cloud was spreading there; the thunders increased; the lightnings flashed more vividly; the knees of the negroes shook together with alarm. Already was the rain descending, and in torrents, though the clear sky could be seen in all directions under the cloud. The Captain meanwhile maintained his mystical attitude and continued his wild and extraordinary evolutions. Some of the whites, who were in the secret of the hoax, fell upon their knees, and were imitated by the negroes,

whose fears augmenting as the storm grew fiercer, with clasped hands fastened upon the Captain a stare of awe and deprecation. In short, the scene presented a more complete triumph of philosophy over ignorance than I could have supposed it possible to have been produced anywhere in the nineteenth century, and most especially anywhere in our enlightened Republic.

"We often fired the saw-grass marshes afterwards, and whenever there was no wind stirring we were sure to get a shower; and I say with perfect confidence that we never had a shower in April or May at any other time. Sometimes when there was a breeze it would carry the smoke toward the horizon, where there would seem to be a fall of rain."

Espy dwelt on this theory with great devotion, and in 1845 published a special letter addressed "To the friends of science," in which he proposed a plan for practical rain production. As the paper in question is now very rare and his plan possesses some features of interest, I quote it here:

"Let masses of timber to the amount of 40 acres for every 20 miles be prepared and fired simultaneously every seven days in the summer on the west of the United States, in a line of 600 or 700 miles long from north to south; then the following results seem highly probable, but not certain until the experiment is made: A rain of great length north and south will commence near or on the line of fire; this rain will travel eastward; it will not break up till it reaches far into the Atlantic Ocean; it will rain over the whole country east of the place of beginning; it will rain only a short time in any one place; it will not rain again until the next seventh day; it will rain enough and not too much in any one place; it will not be attended with violent wind, neither on land nor on the Atlantic Ocean; there will be no hail nor tornadoes at the time of the general rain nor intermediate; there will be no destructive floods, nor will the waters ever become very low; there will be no more oppressive heats nor injurious colds; the farmers and mariners will always know before the rains when they will commence and when they will terminate; all epidemic diseases originating from floods and subsequent droughts will cease; the proceeds of agriculture will be greatly increased, and the health and happiness of the citizens will be much promoted. These, I say, are the probable—not certain—results of the plan proposed—a plan which could be carried into operation for a sum which would not amount to half a cent a year to each individual in the United States; a plan, which, if successful, would benefit in a high degree not merely the landsman, but every mariner that plies the Atlantic. If this scheme should appear too gigantic to commence with let the trial be first made along the Alleghany Mountains; and let 40 acres of four 10-acre lots be fired every seven days through the summer in each of the counties of McKean, Clearfield, Cambria, and Somerset, in Pennsylvania; Allegany, in Maryland, and Hardy, Pendleton, Bath, Alleghany, and Montgomery, in Virginia. The 10-acre lots should be, as nearly as convenient, from 1 to 4 miles apart, in the form of a square, so that the up-moving column of air which shall be formed over them may have a wide base, and thus may ascend to a considerable height before it may be leaned out of the perpendicular by any wind which may exist at the time."

Espy's theory was practically the modern convective theory of storms, and to this most worthy student of science is due the credit of calling

effective attention to the part which the condensation of aqueous vapor plays in the mechanism of storms.

Third method.—Another proposed method of making rain artificially is that of L. Gathman, of Chicago, patented in 1891 (No. 462795). His method is to "suddenly chill the atmosphere by rapid evaporation, and it is also advisable to produce a heavy concussion in connection with the cooling in order to set the different air currents in motion. It is obvious that sudden and rapid evaporation in the upper regions of the atmosphere could be accomplished in various ways by the evaporation of various highly compressed gases; but the evaporation consequent upon the release of liquefied carbonic acid gas is thought to be the most efficient." He proceeds:

"In accordance, therefore, with my invention, liquefied carbonic acid gas is liberated in the upper regions of the atmosphere and will, of course, instantly evaporate and spread out in a sheet of vapor of an extremely low temperature and produce a cloud. The surrounding atmosphere will be chilled by its proximity to the cold vapor, and the moisture in the atmosphere will be condensed thereby. The condensation takes place in large quantities and with great rapidity, so that a cloud is formed that will precipitate a rainfall upon the earth.

"The liquefied carbonic acid gas can be confined in a suitable shell or casing, said casing also to contain an explosive—gunpowder, dynamite, etc.—which is thrown or shot into the upper regions of the atmosphere and there exploded by a time fuse. A balloon, moreover, could be employed to elevate the shell or casing containing the liquefied carbonic acid gas, and the explosion to liberate the gas could be made by an electric current controlled by persons upon the earth."

Mr. Gathman also published a little book in which were reproduced, with approval, Professor Newcomb's article entitled, "Can we make it rain?" and Professor Houston's "Artificial rain making." In this book we learn that Mr. Gathman has been occupied with the use of condensed carbon anhydride to cool heavy guns, and was led to his theory by the results of his experiments with ordnance. He also experimented on his method of rain making, and says (p. 38):

"In making some experiments last year, a shell filled with liquefied carbonic acid gas was exploded at a height of 600 feet; a cloud was produced in the clear sky at once, and, floating along on a current of air, was visible for miles. This experiment was made in July, 1890, and since that time I have made sufficient other experiments to satisfy myself that I can produce rain whenever necessary, or at will. Experiments made in my astronomical observatory, at a height of only 75 feet, have proven that by the evaporation of liquefied carbonic acid gas a rain shower on a small scale can be produced with but a small quantity of the gas. When completed arrangements have been made, the experiments mentioned will be seen to be but a step to the practical illustration on a grand scale."

It appears that in Gathman's method the explosion plays a very subordinate part; but in the method to follow the explosion is the main, if not the only, thing.

Fourth method.—The concussion theory is probably an old one, though it is not correct to refer it to Plutarch, as is sometimes done.

In his life of Marius, referring to the battle with the Teutons near Aix, in July, 102 B. C., Plutarch says: "Extraordinary rains pretty generally fall after great battles; whether it be that some divine power thus washes and cleanses the polluted earth with showers from above, or that moist and heavy evaporations steaming forth from the blood and corruption thicken the air, which naturally is subject to alteration from the smallest causes."[1] Here are two distinct suggestions for rain making, but not that of concussion.

The first elaborate treatment of the concussion theory appears to have been by Edward Powers, civil engineer, who published in 1890 a book on the relations of battles to rainfall. The first edition was printed in Chicago in 1871, but most of the edition was destroyed by the great fire in that city, which also destroyed the stereotype plates. The latest issue seen by me contains an inset of 15 pages devoted to a criticism of Professor Newcomb's article already mentioned. The aim of this book is to prove that great battles or heavy cannonading are usually soon followed by rainfall. A fair criticism of the book is that such phenomena are not invariably followed by rain. The coincidences could be explained by the fact that in the season of military operations rain is usually falling somewhere in eastern United States; that in fact it is not clear but that the rain is a pure coincidence. The argument is not conclusive. Indeed, it is only fair to say that under the conditions involved it could not be made conclusive. Mr. Powers, however, did not despond, but used his utmost endeavors to bring the matter to a test. For this purpose he persuaded Senator Farwell, in 1874, to present a petition to Congress asking that the theory be tried. This, with a previous petition to which he refers, seems to have been without response on the part of Congress.

Later, and apparently independently, the matter was taken up by Gen. Daniel Ruggles, of Fredericksburg, Va., who obtained a patent in 1880 (No. 230067) on making rain by explosions in the clouds. His claim runs:

"The nature of my invention consists in sending one or more balloons into the cloud realms, said balloon or balloons carrying torpedoes and cartridges charged with explosives, and there to explode or detonate them by magneto-electric or electric force through metallic wire, textile cordage, or by the fuse, or by mechanical force, in order to precipitate rainfall by concussion or vibration of the atmosphere."

General Ruggles succeeded in bringing the matter before Congress, but did not succeed in getting an appropriation. His plan was much discussed in the newspapers at the time, but does not seem to have reached the experimental stage.

Senator Farwell, however, continued his interest in the matter, and in 1890 finally succeeded in obtaining an appropriation, first of $2,000,

[1] Plutarch's Lives, Clough's revision, Am. Book Exchange edition, 1881, pages 390, 391.

then of $7,000, for carrying on the experiments, some of which he had already had made at his own expense. The appropriation assigned the conduct of the experiments to the Department of Agriculture, and the Secretary selected R. G. Dyrenforth for the work. The experiments were carried on in the vicinity of Washington and in Texas. A report from Mr. Dyrenforth was published by Congress in 1892. At the next session of Congress another appropriation of $10,000 was made for this purpose, of which the sum of $4,913.59 was expended, as before, under Dyrenforth's direction, the remainder having been covered back into the Treasury.

Mr. Dyrenforth's methods were highly ingenious. He used a variety of explosives, on the ground and in the air, by great single explosions and by volleys. He introduced many novelties, among them that of exploding the gas in the balloon itself when high in the air. His conclusions, as stated by himself in his first report, were (p. 59):

"First. That when a moist cloud is present, which, if undisturbed, would pass away without precipitating its moisture, the jarring of the cloud by concussions will cause the particles of moisture in suspension to agglomerate and fall in greater or less quantity, according to the degree of moistness of the air in and beneath the cloud.

"Second. That by taking advantage of those periods which frequently occur in droughts, and in most if not in all sections of the United States where precipitation is insufficient for vegetation, and during which atmospheric conditions favor rainfall, without there being actual rain, precipitation may be caused by concussion.

"Third. That under the most unfavorable conditions for precipitation, conditions which need never be taken in operations to produce rain, storm conditions may be generated and rain be induced, there being, however, a wasteful expenditure of both time and material in overcoming unfavorable conditions."

His second report has not been published, but I infer that his second series of observations were believed by him to confirm the results of the first.

Mr. Dyrenforth generally omitted one check which he might well have employed, and which I personally urged him to employ. Experiments of this sort, made in the free air, with the accompanying conditions not under control, should be accompanied with every possible check; and one self-evident and very necessary one is the observation of a physicist familiar with the meteorologic side of physics. Such an expert (Mr. G. E. Curtis) accompanied the party in its first experiments. His report (except the bare meteorologic record made during the experiments) does not accompany Dyrenforth's document. It was presented, however, to the Philosophical Society of Washington, and was printed elsewhere. Mr. Curtis says, substantially, that an explosion in a cloud brings down a few scattering drops of rain, and this may happen even with an explosion on the ground, if heavy. Otherwise he says there was no rain making. It is but fair to say that with Mr. Dyrenforth's report are given the reports of his assistants, Mr. John

T. Ellis, Lieut. S. A. Dyer, and Mr. Eugene Fairchild, and they were stronger in the expression of a belief that rain was successfully made than is Mr. Dyrenforth; and there are also many favorable quotations from spectators.

Prof. A. Macfarlane, of the University of Texas, was present as an uninvited guest during the elaborate experiments near San Antonio on Friday, November 25, 1892, beginning at 4 p. m. The sky was from time to time overcast, and the natural conditions were not unfavorable for rain. Many explosions were made without rain until late in the evening, from which point I will take up the story in Professor Macfarlane's own words, as given in a letter to the New York World December 4, 1892:

"At 10.15 a balloon was sent up and was lost in the darkness; when it exploded a very large area of light was seen, as if the explosion had occurred inside a cloud. There was no fall of rain at the camp, and nobody was stationed below the spot where the balloon exploded.

"I consider this the only experiment that was worth making, yet no care was taken to observe whether rain did fall. It is conceivable that the explosion of a 12-foot balloon inside a cloud ready to precipitate may jar the particles so as to quicken the dropping of the rain. This was the idea of Ruggles. But to test whether some rain can be drawn down in this manner from a rain cloud does not suit the ideas of cranks who wish to get a large something out of an absolute nothing.

"At 10.45 a mist became just perceptible. The General issued an order to get ready the rain gauge. The boys hurried up a balloon, which was nearly ready, but it had no effect on that mist.

"At 11.40 the mist ceased, and the stars appeared in places nearly overhead. The General apparently felt that things were going against him, for he suggested to the Doctor to put a small piece of dynamite in the shells, and also to try the effect of an explosion down at the springs.

"At 12.30 a 12-foot balloon went well into the cloud, but no rain effect.

"At 1 o'clock, the time when operations were to be suspended for the night, it was fair, with some stars visible, and the boys were preparing one more balloon. Colonel King remarked that it would be necessary to keep up the operations for forty-eight hours. I retired to a room in the hotel, from which I could see the operations.

"At 1.30 I heard a slight shout from the balloon boys, and I could hear the rain pattering on the roof. The General, who had also retired to the hotel, threw open the window and called out: 'Hurry up, boys.' After ten minutes the balloon was exploded, and the rain almost immediately diminished so as to be scarcely perceptible. When the explosion occurred I had my head out of the window. The hotel, a frame house, shook considerably, but there was no breaking of glass or any of the effects produced by a powerful explosion on the solid earth.

"At 1.50 the General went out to observe, and I heard him say: 'There is a beautiful rain to the north of us and to the west of us.'

"At 2 the rain had entirely ceased, and the last of the operations consisted of two shells fired in succession at 2.05."

Professor Macfarlane is a competent physicist. He was trained in Edinburgh, and has, I believe, no such appreciation of humor as to

make him unconsciously color his report. His conclusions were adverse to the rain makers.

Referring in general to the experiments in Texas, one fact has been generally overlooked. The rainfall in western Texas is always small, but it is subject to its maxima and minima, like other regions. Now, there is a rainfall season in July and August in Arizona and New Mexico, and this reaches western Texas. Thirty per cent of the annual rainfall descends in these two months along the eastern border of New Mexico and in the western angle of Texas. At El Paso this percentage is 40. This maximum passes gradually eastward and is found in the southeastern part n September. The experiments in the western part of Texas in 1891 were in September, fairly in the time of this maximum. There is another maximum of rainfall in Texas in November. This is in the northeastern part of the State. The second series of rainfall experiments in Texas was in November, 1892, at San Antonio. The maximum here occurs in September, but there is in November an average (for twenty-four years) of 2.5 inches, or one-twelfth of the annual 30.6 inches. There is a high relative probability of rain naturally in September in the region of the experiments in 1891, and there is an even chance of it in the region of 1892. To test the theory of rain making in Texas the months might have been better chosen; yet it is but fair to say that the rainfall in western Texas is very fluctuating, as it comes generally in local storms.

Fifth method.—There is another method of rain making which is still a mystery, but which deserves mention because it has been submitted to actual test. I have not been given permission to use names in this case, and will only guarantee that the letter which I quote came from a high official of a railway company and is worthy of the credence which an official business letter of this sort should carry with it. This gentleman, under date of August 22, 1893, wrote to me as follows:

"DEAR SIR: Your letter, August 10, - - - has been referred to me. In reply thereto, we have no published reports concerning rain-making experiments such as mentioned by you. While these experiments have been made by a couple of employees of this company, we can say but little about them ourselves. These parties claimed to be able to cause rainfall by artificial means, and we have furnished them with materials, together with transportation facilities, more or less all the time since the early part of May, they having experimented in some eighteen or twenty different locations, and in each case we have had more or less rainfall. In nearly every instance we can but feel there is something in their claim. We have had from one-half to 3 or 3½ inch falls of rain, covering a section of country from 25 to 90 miles in length and 10 to 30 miles wide, all owing to the direction of the wind, and in some cases at times when there was no moisture in sight or known until they began operations, and then only throughout the section over which their own rainfall extended.

"I presume the operators themselves have kept a record of their work, and results of same, at each of the different points where they have been located, and should you desire I will have them make a state-

ment showing what they themselves feel they have accomplished. We have been slow to believe there was anything in this business, but at the same time must admit that they are either very fortunate in reaching the different points where they have experimented just in time to have rain storms, or they have certainly hit upon the right thing in the way of rain making."

The process I do not know, but a humorous railway man, personally cognizant of the matter, told me that the operators kept themselves carefully secluded in a freight car with a hole in the roof, and when occasional glimpses were caught of them they seemed to be cooking over a red-hot coal stove. Probably the method employed was that of Frank Melbourne, the Australian, who has most reputation in the West, and who has carefully kept his secret. It is proposed by the company in question to continue the experiments in another field and with competent experts accompanying, and another railroad company is seriously considering the propriety of entering the field.

CONCLUSIONS.

Finally, permit me to complete this sketch by some remarks; and, to make them as specific as they can be made, permit me to put them in the form of questions and answers. The answers are my own.

Q. Will a noise make rain?—A. No; there is no reason in theory or practice to make us think it will.

Q. Will a concussion make rain?—A. It will probably jostle the droplets in a cloud and may bring a few together, which may coalesce and become large enough to cause them to fall to the ground—a few scattering drops only.

Q. Will smoke or dust released in great quantities produce rain?—A. Floating particles of spongy texture will absorb the moisture hygroscopically. If the air is dry this will make it drier, and prevent rain. If the air is very moist and near saturation, any solid particles in the air will facilitate the condensation; witness the experiments of Aitken and Barus. Thus, when other conditions are very favorable, an addition of much dust or smoke to the air might determine a fall of rain.

Q. Will the expansion of carbon anhydride produce rain?—A. Mr. Gathman says he has tried it and with success. Experiments should be made systematically.

Q. Will electric connection with a cloud aid in rain formation?—A. M. Baudouin says it does.

Q. Will a conflagration produce rain?—A. Quite probably, under favorable circumstances. It acts in the line in which nature acts, according to the best of our knowledge. Condensation is the result of chilling the air. The theory of chilling by mixture, the Huttonian theory, a century old, is now known to be inefficient. The chilling in nature seems to be due either to the ascent of air and its consequent expansion and loss of heat, or the chilling of one cloud by having the shadow of a higher cloud fall on it in sunlight. The chilling by ascent

is the method evoked in the Espy plan, and appears to be by all odds the most effective rain producer in nature.

Q. If rain can be made, how much will it cost?—A. This is truly an American question, and quite appropriate to the fin de siècle. Mr. Powers, who, by the way, says that Mr. Dyrenforth did not after all really try *his* experiment, put the cost of one experiment with Government aid at $80,000. Gathman says he can sprinkle the earth at a cost of from $30 to $90 a square mile. Espy proposed to fire the low forest growths at regular intervals at a cost less than 5 mills per citizen per year. The method of concussion costs the comfort and peace of all within hearing, a cost which a much more certain result would not justify.

LIST OF REFERENCES TO THE LITERATURE ON THE ARTIFICIAL PRODUCTION OF RAINFALL.

ATWATER, JOHN B. Cyclone-destroyer: United States patent No. 370845, October 4, 1887; 2 pp., 1 pl.

ABBE, CLEVELAND. The Production of Rain: Report Maryland State Weather Service, Vol. II, 1892, pp. 64–65.

——. On the Production of Rain: Agric. Sci. State College Pennsylvania, Vol. VI, 1892, pp. 288–309. [Abstract: Amer. Met. Journ., Vol. IX, 1892, pp. 312–316; Symon's Met. Mag., London, Vol. XXVII, 1892, pp. 129–137, 154–155.]

BELL, G. H. A Rain Controller: Sci. Amer., New York, Vol. XLIII, 1880, p. 113.

BELLET, DANIEL. La Pluie artificielle dans l'Inde: La Nature, Paris, 23 Avril, 1892, pp. 321–322.

BLAKE, LUCIEN J. Can we make it Rain? Science, New York, Vol. XVIII, 1891, pp. 296–297.

BLUNT, W. B. Automatic Tornado-breaker: United States patent No. 290966, December 25, 1883; 2 pp., 2 pls.

BROWN, L. L. Automatic Transporter and Exploder for Explosives for Aiding Rainfall: United States patent No. 473820, April 26, 1892; 2 pp., 1 pl.

BRUEGMANN, H. Einwirkung des Kanonendonners auf die Regenbildung: Petermann's Mitth., Gotha, 1862, pp. 439–440.

CURTIS, GEORGE E. Rain Making in Texas: Nature, London, Vol. XLIV, 1891, p. 594.

——. Rain Making in Texas: The Inventive Age, Washington, Vol. III, 1891, p. 2.

——. The Facts About Rain Making: Engin. Mag., New York, Vol. III, 1892, pp. 540–551.

CURTISS, G. G. The Production of Rain: Report Maryland State Weather Service, Vol. II, 1892, pp. 63–64.

DAVIS, W. M. The Theories of Artificial and Natural Rainfall: Amer. Metl. Journal, Ann Arbor, Vol. VIII, 1891–92, pp. 493–502.

Der Einfluss des Krieges auf die Witterung: Illustr. Zeitung, Leipzig, B. II, 1870, No. 1418.

DYRENFORTH, ROBERT G., and NEWCOMB, SIMON. Can We Make it Rain? N. Amer. Rev., New York, Vol. CLIII, 1891, pp. 385–404.

ESPY, JAMES P. Artificial Rains [from the National Gazette]: In "Philosophy of Storms," 8°, Boston, 1841, pp. 492–518.

——. To the Friends of Science (on producing rain by artificial means), 8° (Philadelphia), 1845; 6 pp.

——. (Concerning the artificial production of rain). In his Fourth Met. Report: 34th Cong., 3d session, Senate Ex. Doc. 65. 1857, 4°.

FERNOW, B. E. Artificial Rain: Report Secretary of Agriculture, 1890, pp. 227–236.

GATHMAN, LOUIS. Method of Producing Rainfall: United States patent No. 462795, November 10, 1891; 1 p., 1 pl.

GATHMAN, LOUIS. Rain Produced at Will: 8°, Chicago, 1891; 61 pp.

GATTA, L. La Guerra e la Meteorologia. Considerazioni intorno agli effetti dello sparo dell' artiglieria e della fucileria sullo stato dell' atmosfera: 4°, Roma, 1875.

GUYOT, P. Faut-il tirer le Canon pour avoir de la Pluie? Sci. pour Tous, Paris, T. XVII, 1872, pp. 236–238, 244.

HAZEN, H. A. The Production of Rain: Report Maryland State Weather Service, 1892, Vol. II, pp 69–70.

——. Rain Making: Sci. Amer., New York, October 31, 1891, p. 277.

HAZEWELL, C. C. Weather in War: Atlantic Mon., Boston, May, 1862, pp. 593–606.

HOUSTON, EDWIN J. Artificial Rain Making: Jour. Franklin Inst., Philadelphia, Vol. CXXXII, 1891 (October), pp. 308–315; Sci. Amer. Suppl., No. 824, October 17, 1891, p. 13161.

L——. Artificial Production of Rain: Science, Cambridge, Vol. III, 1884, p. 276; La Natura, Milano, Vol. I, 1884, p. 270.

LAUGHTON, J. K. Can Weather be Influenced by Artificial Means? Nature, London, Vol. III, 1870–71, pp. 306–307.

LE MAOUT, CHARLES. Exposé de la Doctrine des Condensations (Artificial production of rain): 8°, Saint-Brieuc, 1856; 17 pp.

——. Effets du Canon et du Son des Cloches sur l'Atmosphère: 8°, Saint-Brieuc, 1861; 15 pp.

——. Le Canon et la Pluie: 8°, Saint-Brieuc, 1870; 9 pp.

——. Cuirassés, Torpilles et Tempêtes: 8°, Cherbourg, 1891; 6 pp.

——. Lettre adressée par Charles Le Maout au "Petit Journal," le 23 février 1887. Météorologie (Artificial production of rain): 8°, Cherbourg, 1891; 6 pp.

LE MAOUT, ÉMILE. Lettre à M. Tremblay sur les Moyens proposés pour faire cesser la Sécheresse des six premiers mois de l'année, 1870: 8°, n. p. (1891); 16 pp.

LEWIS, J. C. Rain Following the Discharge of Ordnance (note to the National Intelligencer, July 25, 1861): Amer. Journ. Sci., New Haven, Vol. XXXII, 1861, p. 296; Petermann's Mitth., Gotha, 1862, p. 113.

MACFARLANE, ALEXANDER. On Rain-Making (December 31, 1892): Trans. Texas Acad. Sci., Austin, Vol. I, 1892–93, pp. 70–80.

NEWCOMB, SIMON. See Dyrenforth.

NOYES, ISAAC P. The Weather Map and the Rain Makers: 8°, Washington, 1892; 46 pp.

Ob die Blitzableiter Gewitter und Regen verhindern und demnach Dürre verursachen können? Schles. Prov.-Bl., Breslau, 1793, number 1.

On Great Meteorological Changes which have Followed Violent Engagements in War: Quart. Journal Sci., London, Vol. VIII, 1871, p. 126.

PICCARD, J. F. Connexion entre le Nombre des Incendies et celui de Jours de Pluie dans le canton de Vaud, pendant la Période de 1840 à 1864: Bull. Soc. Vaud, Lausanne, T. IX, 1866–68, pp. 167–189.

POTTS, T. H. Rain after Fire: Nature, London, Vol. VI, 1872, p. 121.

POWERS, EDWARD. War and the Weather, or the Artificial Production of Rain: 12°, Chicago, 1871; 171 pp.; 2d ed., revised, 12°, Delavan, Wis., 1890, 202 pp.

——. Should the Rainfall Experiments be Continued? A criticism of Prof. Simon Newcomb's contribution to the article in the North American Review for October, 1891, entitled "Can we make it rain?" 12°, Delavan, Wis., 1892, 15 pp.

——. Rain Making: Science, New York, Vol. XIX, 1892, pp. 52–53.

Production of Rain by Human Agency: Sci. Amer. Suppl., New York, Vol. III, 1877, p. 1070.

Rain Makers and Science: The Nation, Oct. 1, 1891, p. 253.

Rain Makers in India: Sci. Amer. Suppl., New York, October 17, 1891.

Rain Making: Symon's Met. Mag., London, Vol. XXVI, 1891, pp. 134–137.

ROWELL, G. A. On the Production of Rain at Will: Builder, London, 1880, pp. 265, 298.

——. Artificial Aurora and Precipitation of Rain: 8°, Oxford, 1883. Privately printed.

RUGGLES, DANIEL. New Method of Precipitating Rainfalls: Sci. Amer., New York, Vol. XLIII, 1880, pp. 106, 342; Les Mondes, Paris, T. LI, 1880, pp. 850–851; Année Sci. Indust., Paris, T. XXIV, 1880, pp. 69–71; Cronica Cient., Barcelona, Vol. IV, 1881, pp. 53–54.

——. Method of Precipitating Rainfalls: United States patent No. 230067, July 13, 1880; 2pp., 1 pl.

RUSSELL, ROBERT. Rain Produced by Fires: Nature, London, Vol. III, 1870–71, p. 448.

SCHREIBER, PAUL. Ueber die in Nordamerika angestellten Versuche zur künstlichen Erzeugung von Regen. (A lecture before the Saxon Economical Society, February 10, 1893): Mitth. der Ock.-Gesell. im Königr. Sachsen, B. V, 1892–93, 8°, 22 pp.

SCHROEPFER, A. Einwirkung des Kanonendonners auf die Regenbildung: Petermann's Mitth., Gotha, 1862, pp. 312–313.

STONE, G. H. Rain Making by Concussion in the Rocky Mountains: Science, New York, Vol. XIX, 1892, p. 52.

TICE, J. H. Do Battles Cause Storms? Amer. Meteorologist, St. Louis, Vol. I (No. 6), 1876, pp. 138–145.

TROWBRIDGE, JOHN. Great Fires and Rain Storms: Pop. Sci. Month., New York, Vol. II, 1873, pp. 206–211.

UNITED STATES DEPARTMENT OF AGRICULTURE. Letter from the Secretary of Agriculture transmitting a report of the special agent of the Department of Agriculture for making experiments in the production of rainfall: 52d Cong., 1st Session, Senate Ex. Doc. 45, 8°, Washington, 1892, 59 pp., 9 pls.

VAN BIBBER, ANDREW. Rain not Produced by Cannonading: Sci. Amer., New York, Vol. XLIII, 1880, p. 405.

WALTON, J. P. Rain Making: Kansas Academy of Sciences, February 12, 1894, 8°; 3 pp.

WARD, R. DEC. Artificial Rain; a Review of the Subject to the Close of 1889: Amer. Metl. Journal, Ann Arbor, Vol. VIII, 1891–92, pp. 484–493.

STONE AGE BASIS FOR ORIENTAL STUDY.*

By Prof. E. B. Tylor, F. R. S.

It seems a suitable introduction to the work of this section to survey broadly the races belonging to the vast Oriental region and to examine the information now available as to the order of their stages of civilization. In the large definition adopted by this Congress, the Oriental world reaches its extreme limits. It embraces the continent of Asia, stretching through Egypt over Africa, and into Europe over Turkey and Greece, while extending in the far East from group to group of ocean islands, where Indonesia, Melanesia, Micronesia, and Polynesia lead on to the continent of Australia and its outlier, Tasmania. Immense also is the range of time through which the culture-history of this Oriental region may be, if often but dimly, traced. History illuminates its comparatively later periods. The earlier can only be inferentially reconstructed by comparison of the still representative races and languages, and their remains materially preserved in the soil and intellectually in culture; that is, in the arts, institutions, and beliefs which have lasted on from the ancient world. On the maps which represent the Oriental world, as known to history, we see a band of civilized nations stretching from Egypt through Phenicia, Babylonia, Assyria, Medo-Persia, India, China. This compact culture band is underlaid by traces of former barbarism and geographically skirted by barbaric border-lands, while a savage region is either actually met with beyond these limits, or its former existence inferred inside as well as outside them. In agreement with recognized principles of the development of culture, it may, I think, be taken that the low culture extending widest, represents the earliest platform of culture over the whole region; that an inner but still vast inlying district rose to the barbaric level, and that within this again the higher culture area was formed. Indeed, the terrace-temple of Babylonia, where terraces narrower, but more lofty, rise one above another, seems to my mind a suggestive model of these stages of culture; where the higher degree covers the smaller area.

* Inaugural address of the president of the section of anthropology and mythology, Ninth International Congress of Orientalists, London, September, 1892; *Transactions*, vol. II.

It is to the wide foundation platform of Oriental culture that my remarks to-day specially refer, not from any over-estimation of the importance of this basis, as compared with the higher stages, but because these latter have, with the aid of historical record, become more familiar to the studious world; while as to the lowest and widest Oriental culture level, I have even some new evidence to offer.

The former presence of races of low culture in countries where none now remain is more than by any other symptom proved by the presence in the ground of stone implements and other objects characteristic of low culture among modern savages and barbarians, and doubtless also characteristic in the remote past. Thus the Stone Age is practically identified with the savage and low barbaric periods. Moreover, the usual division of the Stone Age into the later and higher Neolithic or ground stone period, and the earlier and lower Paleolithic or chipped stone period, the evidence for which has been thoroughly threshed out, may here be taken for granted. As to the Paleolithic period, discoveries of the last generation have established the presence of tribes of men over a large part of Europe whose high antiquity is shown by the geological position in which their relics are found in Quaternary gravel-beds and caves, and by their association with that extinct fauna which gives their age the concise name of the Mammoth period. That their stage of culture was that of savage hunters and fishers is obvious from the rude stone implements themselves, and from other objects of more or less Eskimo type, while at the same time, carvings and scratched outlines of animals show an extraordinary sense of art. It has been proved also that the rude tribes, whose existence was argued from their rudely chipped stone instruments, were not confined to Europe. Let us notice their few but important occurrences within our Oriental area.

Egypt, it is important to notice, has yielded implements of well-marked Paleolithic type, a solid basis for its history of culture. They may be traced on into Syria, while the laterite beds of South India, by their similar quartzite implements, testify to the former habitation of the Peninsula by tribes there representing the primitive savage life. In Siberia, where the remains of the mammoth have been preserved so perfectly, I should think that the weapons of coeval man might probably be found in corresponding quantity, but, so far as I know, no thorough quest for them has yet been made..

At the farthest extreme of our Oriental boundary in Tasmania stone implements which must be classed as low Paleolithic in type appear. So remarkable are the characters of these implements and the circumstances of their occurrence, that as they are very scarce in Europe I have placed on the table all the specimens I have been as yet able to obtain. The point I have to draw attention to is that though of rudeness beyond that of the remotest ages known, they remain in use into our own time. It is now more than thirty years since my attention was aroused by seeing a stone implement from Tasmania in the museum of

the Somersetshire Natural History Society at Taunton, which led me to make inquiry at the International Exhibition of 1862 of Dr. Milligan and other representatives of Tasmania. Their answer I printed in 1865, with a comparison with the implements of the Paleolithic age. "The Tasmanians sometimes used for cutting or notching wood a very rude instrument. Eye-witnesses describe how they would pick up a suitable flat stone, knock off chips from one side, partly or all round the edge, and use it without more ado; and there is a specimen corresponding exactly to this description in the Taunton Museum. An implement found in the drift near Clermont would seem to be much like this," (*Early History of Mankind*, p. 195). This, if not the earliest published notice of these Tasmanian implements was one of the earliest; but it will be observed that it did not yet amount to stating that these rude savages used no stone implements except such rudely chipped ones, for it was not yet proved that they did so. This proof was required to bring the Tasmanians into the position where I wish to place them before you now, that of modern savage representatives of the remotely ancient Paleolithic ages. The requisite evidence has since been supplied by the archæologists and geologists of the Royal Society of Tasmania.

It was not a question merely of studying the make of implements buried in the ground, as the time was not yet past for descriptions by Englishmen who had actually seen how the natives made and used these roughest of human implements. They might be mere fragments picked up or detached by a blow from the rock, but the more artificial tools were much improved upon by skillfully, with another stone, striking off chips along the margin, so as to give a good cutting edge; but this edge-chipping was only done on one side. The natives were never known to grind an edge, nor to fix the chipped stones in any kind of handle. Of this, the accounts of observers who saw the art carried on, and who, one would think, must have been aware if the natives could do anything better, may be taken as good testimony. At any rate it is proof positive that such specimens as are here exhibited are characteristic of the general standard of the Tasmanian implement-maker's art. It is seen by comparison with ordinary Paleolithic implements from the drift-gravels and bone-caves that the modern savage was distinctly lower than the ancient. The pick of the Europeans of the Mammoth period, edged and pointed by alternate chipping on both sides, is far superior to anything seen or described in Tasmania. The typical "hatchet" or "tomahawk," as it is sometimes called, of Tasmania, is at most the equivalent of the one-side edged "scraper" of Paleolithic Europe.

Thus it appears that in this far-off corner of the Oriental world Paleolithic man, not even of the highest, had survived within living memory. The question must of course be raised as to whether the low stage of Tasmanian implements may be due to degeneration; but it is difficult,

without altering our conception of human nature, to suppose the rude ancestors of the savages to have habitually edged their chopping-stones on both sides, and given up this for the one-edged flake, for many purposes much less effective. Not less instructive is the fact that the Tasmanians were not known to fix their chopping-stones in any kind of handle, but only to grasp them in their bare hands. What was the practice in this respect among the Europeans of the Mammoth period is not yet quite conclusively known. Some of their tools or weapons were obviously made for grasping in the hand. Others may have been fixed to wooden hafts, though it is hardly proved that they actually were. At any rate, the Tasmanian example warns us not to rely on the argument that to put a handle to a hatchet must have suggested itself naturally to the lowest savages, for it seems not to have suggested itself to Tasmanians. When they saw the European hatchet and how to use it, they "were transported with joy," and took to it at once. If their ancestors, having fixed their chipped stones in withes or boughs, afterwards held them in their naked hands instead, man is a less intelligent animal than other experience of him would warrant. Even if it should prove by further quest that stone implements of higher finish, say equal to the Australian, occur in the ground or were made by the Tasmanians, this would not much alter the inferences as to their culture-history, but would still leave the Tasmanians as a people actually seen in modern times to pursue their life on a Paleolithic footing under circumstances where Neolithic man would have practised his higher art.

We can hardly over-estimate the anthropological importance of this negroid race, whose grievous extirpation so sadly clouds our colonial history. In the light of these facts Paleolithic man ceases to be a mystery, now that we can see the portraits and examine the life of his far Eastern counterpart. They enable us to realize, at least in vague outline, a state of man in geological antiquity which has lasted on into modern life. It is most instructive to examine what the condition of these modern Paleolithic people was in other respects, and the labors of Mr. Ling Roth, who has collected in a single volume ("*The Tasmanians*" London, 1890) almost every scrap of record, puts it before the world in a picture which, considering how much of the evidence comes from uneducated witnesses, is on the whole remarkably consistent. Of savage tribes not in a state of decay, the Tasmanians may be reckoned among the lowest known. Their want of art in stone implement-making agreed with their condition as to other weapons and tools. They had no bow and arrow, like that of their Australian neighbors, no throwing-stick to hurl their spears, and their spears, though they seem to have known how to point them with a human bone, were usually long sticks straightened by bending, and the points of which had been thrust into the fire and sharpened. These, and waddies or clubs tolerably shaped, were their weapons of the chase and war. They had not even the rude bark canoe of the Australians, but a canoe-like raft of rolls of

bark. They were string-makers, good plaiters, and basket-makers, and it is noticed that some of their stitches and plaits are familiar in our own basket-work and point-lace. They made fire with the ordinary fire-drill. Their wandering life accounts for the rudeness of their simple huts and wind-shelters of boughs and bark. Mentally, they have been well defined in the following words: "Their intellectual character is low, yet not so inferior as often described. They appeared stupid when addressed on subjects which had no relation to their mode of life, but they were quick and cunning within their own sphere."

Morally, it is not difficult to understand how two kinds of statements are made about them, which seem incompatible, but are not really so. Their inoffensiveness when not ill treated or alarmed or hostile, gave place to sly and rancorous cruelty toward those they regarded as enemies. Their nomad life brought with it the ancient savage custom of abandoning the sick and aged. As nomad hunters they had but the first rudiments of government by the strong man of the tribe; but as usual among such tribes, when war broke out, the authority of a leader or war chief was recognized. The two great tests, language and religion, hardly place the Tasmanians below recognized savage levels. Enough of their language is preserved to show it as simple and scanty, of an agglutinating type, *mi-na*=I, *mi-to*=to me; *pugga-na*=man, *lowa-na*=woman; *timy*=no; *lugga-na*=foot; compounds of these latter, *lowa-timy* (woman-no)=bachelor; *pugga-lugga-na* (black)=man's footstep. The numerals do not go far, but reach to *pugga-na mara*=5, verbally man-one (obviously he held out one hand). There is a proportion of emotional and imitative words, and no doubt it is true, as described, that their sentences depended much on tone and gesture. It would have been most instructive to have had examples of how this was managed, but, unfortunately, here the information fails. The Tasmanian is distinctly a low organized language, but not at all a language belonging to man in what is called "a state of nature." Still less is this the case with the Tasmanian religion, which is a well-marked animism, extending about as high in its development as among other savages. The accounts given by a number of Europeans, of whom some confused white man's ideas with native, require criticism; but the mistakes generally disappear on comparison, and the vocabularies, which show what religious ideas the natives had words for, are an excellent test. It is quite clear that the word *warrawa*=shadow served them to describe the souls of the dead, who became guardian spirits of their friends and hostile ghosts to their enemies, so feared that men would not willingly go out at night; that there was a good land of the dead, with life like this continuing, or that this land came to be identified with England, whence the dead came back as white men; that demon spirits could possess men with epilepsy and other spirits could expel them; that the land and forest swarmed with spirits, among whom is especially mentioned the echo, which they called

kukanna wurrawina=talking shadow. The spirit or god *Rediarapa*, whose name was identified with thunder and lightning, and who was feared accordingly, is vouched for by full evidence; but the deity, "whom they call the good spirit," and who presides over the day, is not to be found in the vocabularies, and collapses on comparison of documents.

Taken all together, there is definiteness in these accounts of a low Stone Age people seen in actual modern existence. How is it that modern savage man should differ so little from man at the highest geological antiquity? The answer seems to be that of possible permanence as well as possible development in culture. Let a tribe arrive at a condition of equilibrium with surrounding nature, its "*milieu environnant*," to use the phrase of Lamarck, in which it can hold its own, this may be a condition which suggests no progress. As there were shells of the Tertiary period indistinguishable from those now living, so there are men. Behind the Paleolithic period lies that undefined past which, whether keeping tribes unchanged under unchanged conditions or changing under changing conditions, has to account for the condition of savage man, which indeed is within a moderate interval of our own. It is a question not of nature, but of degree.

The Oriental area thus presents a basis of man in the Paleolithic stage of culture, relics of which remarkably occur in boundary districts. Let us now examine the Oriental area occupied by traces of the Neolithic stage.

The South Sea Islanders are the best known of high Stone Age peoples. On the continent of Asia history knows of some peoples, the Ichthyophagi of the Beluchistan coast and the aboriginal tribes of China, as still using stone tools or weapons, but for the most part the former use of these is only apparent by the celts and arrow-heads of stone found in the ground, and explained mystically by peoples who have forgotten their real purpose. Hindus still worship a polished celt under a sacred tree as a symbol of Mahadeva, and the Japanese see in the arrow-heads they pick up in the fields the spirit-arrows of storm fights in the sky. Egypt here, as usual, vindicates its place as the museum of culture-development. The flint arrow-heads and ceremonial flint-knives have long been known, and now the researches of Mr. Petrie show Egypt, not in its remotest antiquity, actually emerging from the age of stone into that of copper and bronze, flint-flakes remaining in use for cutting and chipping tools and to arm the reaper's sickle. This is an industrial condition which may remind us of that of Mexico before the Spanish conquest.

This consideration of the Oriental world during the Neolithic or later Stone Age raises a problem which is complementary, and in some respects converse, to that of the development of culture. It leads us to trace the migration of culture from the higher nations into the lower. Even in what is called the unchanging East the culture of the ruder

tribes is far from being (so to speak) their own, so palpably has it been affected by the influence of foreigners of higher and, consequently, more powerful organization, thoughts, and arts. In the present state of anthropology it is particularly desirable to ask the opinions of special students of the great Oriental nations, from Egypt to China, as to what may be called the old trade-routes by which ideas have been carried over the barbaric world. It seems that this carrying has been actively going on within the limits of what is technically known as the Stone Age. Ever since Cook's voyages the Polynesians have stood, and rightly so, as especially representative of the Stone Age. And yet the traces of their communication with cultured Asia are shown by various symptoms. Playing on the jew's-harp and flying kites are the sports of Asiatic nations, but they spread continuously from Asia over Melanesia and Polynesia, where they may have been before the late times in which they find their way into Europe.

Especial interest attaches to the system of the universe prevalent over the South Sea Islands, examined so as to show how far it differs from the simple doctrine of the three worlds, the *triloka* of earth, firmament, hell—a system which, resting on the apparent direct evidence of the senses, belongs everywhere to man in the earliest stages of knowledge. The Polynesian systems I take as so obviously belonging to the borrowed and degenerate forms of the Babylonian planet-system that I think the questions open are merely in which form and by what route they spread over the Pacific Islands. According to the ideas of the Mangaians themselves, the earth they live on is on the top of a vast hollow cocoanut shell, the interior of which is Avaiki, the under-world, into which the sun and moon descend by western openings and rise in the East. Above, the ten heavens of the blessed spirits rise one above the other. Below, the dismal Hades is divided into stages of gloom and decay, down to mere nothingness.

In the New Zealand cosmology, as recorded by Mr. John White in his *Ancient History of the Maori*, we have a system of the same source, only varying in details. Above the flat earth the ten heavens rise in successive strata. The lowest three contain the clouds and storms, and the lake, which by its overflow pours down rain and hail. Above these are seven heavens inhabited by human souls, other spirits, and gods, up to the highest, where Rehua dwells. The counterpart, ten hells, or rather, stages of the under-world, have the four uppermost under Hine-niu-te-po, Great Woman Night, so that it is there that the sun sets. Below are six more dismal regions, in the lowest three of which is the goddess Meru, the lowest of all being called Meto—that is, extinct or putrid.

Now it is plain that the knowledge of astronomy of the Polynesians neither needed nor authorized these schemes of strata above and below, of which they could know nothing; but regarded as degenerate versions of the Babylonian-Greek astronomy, where the orbits of the sun,

moon, and five planets were interpreted as indicating the seven concentric spheres, with others for the fixed stars, the difficulty is met. Even in the Hindu, Buddhist, and Moslem systems of the universe, though derived from this planetary source, the planetary part (all, indeed, that gives the system its value) has long since dropped out of sight, and the spaces the heavenly bodies occupied have been turned to account in complex series of heavens and hells. Both the Indian and Moslem systems may be easily traced into the Indian Archipelago, and it is a last, and I think not unreasonable, step to suppose them spreading over the Pacific Islands. The Mangaian and Maori schemes even bear a closer resemblance to the Hindu than to the Moslem, indicating Indian religions as their carriers.

Thus I close this attempt to lay a Stone Age basis (if I may use the expression) for the study of Oriental civilization. Not attempting here to rise to the Metal Age and to begin the study of the higher stages, to which alone it has been habitual to confine the term civilization, I commend to Oriental scholars the thought (of which it is well never to lose sight) of the humbler and more ancient stages of life which underlie it.

THE ART OF CASTING BRONZE IN JAPAN.[1]

By W. Gowland, A. R. S. M., F. C. S., F. S. A.

Late of the Imperial Japanese Mint.

The art of casting bronze has been practiced by almost all nations from very early times. In Europe at a remote period, long before the dawn of history, we have numerous examples of the skill of primitive man as a founder of bronze. Weapons of defense and implements of the chase are the chief specimens of his earliest work; but later, when other wants arose beyond the bare necessaries for his existence, we find, together with these, objects for personal adornment and domestic or ceremonial uses.

In Asia the earliest practice of the art is shrouded in the mists of extreme antiquity. Certain bronze figures from Chaldea are attributed to a period not later than 2000 B. C., and, although of very archaic form and rude execution, indicate that the casting of bronze must have been followed in that country even for many centuries before that remote date.

In Japan the founder's art has a much less antiquity; it does not extend back to these distant periods; in fact, no remains of any metal castings, even of weapons of defense, have been found there approaching in age even those of the early Bronze period in Europe.

The Japanese do not appear to have migrated to the islands they now occupy earlier than perhaps seven or eight centuries B. C., and the aborigines whom they found there were totally unacquainted with the use of metals. Hence all objects of metal of the earliest times which have been discovered are Japanese, and are not older than that time.

The evidence afforded by tumuli and dolmens, and the remains found in them of the early history and civilization of the Japanese, demonstrates clearly that in prehistoric times there were two periods, which are more or less clearly defined by the progress which they made in the art of metallurgy, viz, a Bronze and an Iron age. The Bronze age begins with the immigration of the race, and terminates about the second century B. C. The Iron age then commences, and extends to the present time.

[1] From the Journal of the Society of Arts, No. 2215, Vol. XLIII, May 3, 1895. Paper read before Society of Arts, London, April 23, 1895.

It is worthy of note here that the Bronze age and the first period of the Iron age are also characterized by two distinct forms of sepulchral monuments, the former by barrows, or simple mounds of earth, and the latter by megalithic dolmens and highly specialized forms of chambered tumuli. There is no evidence whatever of a Copper age preceding that of Bronze, but contemporaneous with the early Iron age, and up to the sixth or seventh centuries A. D., we find copper in more extensive use than bronze. Iron swords, trappings, and bits for horses, decorated with thin sheets of copper, coated with gold, are found in abundance, while objects of bronze are rare.

THE BRONZE AGE.

The castings which represent the early Bronze age in Japan consist solely of swords and arrowheads, the wants of the people then being evidently few and simple; and although objects for personal adornment were in use, they were made exclusively of steatite, jasper, quartz, or other stones. The swords are found in barrows or merely buried in the ground, and never along with objects of iron; the arrowheads, on the other hand, occasionally occur also in dolmens, associated with iron swords, and thus connect the Bronze with the Iron age. These bronze swords are undoubtedly the most ancient castings in Japan. They are simple two-edged weapons, resembling in form the short sword of the ancient Greeks. In some examples the blade is cast in one piece with the hilt, but in others with a tang, to which a hilt was subsequently attached. The mold was of stone and was made in two pieces. Illustrations of a mold and sword are exhibited. This is the oldest mold for casting bronze in existence in Japan. It was found by a Japanese archæologist in use by some farmers as a hone for sharpening their sickles. (I may say here that on my visit to Seoul, the capital of Korea, I found stone molds in use for casting simple silver articles, the stone being an indurated tuff.)

I was unable to obtain any fragments or even scrapings of these swords for analysis, as there are but few existing, and they are highly prized, but a fragment of an arrowhead which I examined consisted of copper and tin, and did not contain lead as an essential constituent, and the swords are probably of the same alloy.

EARLY IRON AGE (FROM ABOUT THE SECOND CENTURY B. C. TO ABOUT THE SIXTH CENTURY A. D.).

In my explorations and studies of the remains which occur in the ancient Japanese dolmens and chambered tumuli I have always observed a marked scarcity of castings of bronze. Circular mirrors, small bells, and arrowheads occasionally are found, but they form an insignificant part of the contents of a dolmen, the chief objects being swords, arrow and spear heads, horse furniture, and other articles of iron, many of which are plated with thin sheets of copper, coated gener-

ally with gold and sometimes with silver. The bells, which are of the form called by the Japanese "suzu," are simple hollow spheres with a slit cut in the lower half, and contain a loose piece of metal or a small round pebble to serve the purpose of a tongue. They rarely occur singly, but are usually cast in groups on the edges of a flat support, furnished with a hole and tang for attachment probably to a staff or in some cases to the trappings of a horse. They appear also to have been used as ornamental appendages to garments and the hilts of swords.

Several plates illustrating their forms and use are exhibited. The mirrors are the earliest examples of art castings found in Japan. Many are decorated with very elaborate designs, and the excellence displayed in the execution of all denotes a very advanced stage in the art of molding and casting. Some are undoubtedly Chinese, and others are probably native copies of the Chinese designs, but not a few are of true Japanese workmanship. An engraving of a mirror bearing a date—the dynastic title Wangmang—9–23 A. D., is exhibited.

The five mirrors from the province of Higo, in Kijushu, shown in the lantern slide, are said by Japanese archæologists to be of Chinese origin. It is impossible to assign an exact date to the older specimens; the curator of the Imperial Museum, Tokyo, attributes the Chinese forms to the period Han (25–220 A. D.), and I am inclined to agree with him in this attribution. Three specimens (Gowland collection, British Museum), which I obtained from the province of Yamato, were associated with "magatama" and other very ancient stone ornaments, and are probably not later than the above period. These are almost certainly Japanese. The simple geometric designs with which they are decorated bear no relation to the more elaborate patterns seen on Chinese forms.

The largest castings of the early Iron age are curious bell-shaped objects which are of special interest from their form and archaic ornament. It has been conjectured that they are temple bells, but they present no points of resemblance to these or to any instrument or object connected with the ceremonies or observances of Buddhism, and are, in fact, of earlier date than the introduction of that religion into the country. Moreover, none show any signs of having been hung. A considerable number have been found—always buried in the ground—chiefly in Yamato, Kawachi, Totomi, and the neighboring provinces.

As early as 669 A. D. the discovery of one is recorded, and this was even then regarded as being of such a great antiquity that it was presented to the Emperor. The designs with which they are ornamented—the simple geometric line patterns common to many primitive races—are also evidences of their great age. They vary in dimensions from 1 or 2 inches to 5½ feet in height, those measuring 1 foot 6 inches to 3 feet being most common, and all are of extreme thinness compared with their size. Their exact use is still a subject of dispute among archæologists.

The example shown in the illustration (Pl. LXIV) measures 4 feet 6

inches in height and 1 foot 8 inches in diameter at the base, and does not exceed three-sixteenths of an inch in thickness. It is an excellent casting, and must have been cast in a heated mold.

SEVENTH AND EIGHTH CENTURIES A. D.

Two events of marked importance in Japanese annals, on account of their influence on the development of the arts and culture, occurred during this period. Buddhism, which had been introduced about 552 A. D., had been adopted as the religion of the country through the energy and enthusiasm of Prince Shōtoku Taishi (593–621 A. D.), and a fixed capital and court had, for the first time in Japanese history, been established at Nara (709 A. D.). These two centuries form a brilliant epoch in the history of the art of bronze founding, as in that of the sister arts of painting and sculpture. Numerous temples—some on a scale of great magnificence—were erected for the services of the new religion, and the skill of both native and foreign workers in bronze was specially enlisted for their decoration, as well as for the production of statues of the divinities of Buddhism and of vessels for the ceremonies of its ritual.

Stimulated and supported by the priesthood in their efforts to produce objects worthy of the services of the church, the bronze founders achieved results in those early times which have not since been surpassed. Unfortunately many of their works have been destroyed by conflagrations and in the frequent spoliation of the temples during civil wars, but a few have been preserved which are masterpieces of the art of the modeler and founder.

Many tales record the enthusiasm with which the founders of the time were supported by their patrons and of the stubborn manner in which, after many repeated failures, they overcame the difficulties which beset them. The Empress Kōken (749–758) herself is said to have aided the founders in stirring the molten metal for a statue of a Buddhist saint, which was only completed after six unsuccessful attempts. The development of bronze founding and the encouragement of its artists during this period was entirely due to Buddhism, and even for many centuries later the chief works of the art founders were executed for the adornment of its shrines. The survival of most of the older bronzes is also solely due to the care with which they have been preserved in temples and monasteries by the priests of that religion.

Japanese records and traditions relating to the works of art of this epoch, whether of the painter, sculptor, or founder, invariably speak of the help afforded in their production by Korean or Chinese artists, and not a few of the ancient examples which survive are even attributed solely to them.

It is very difficult to determine how far these traditions relating to Korean artists are trustworthy, as no traces of similar works have been found in Korea itself; yet they all present such a close agreement on the point, that we are almost compelled to acknowledge that, if not

EARLY IRON CASTING.

perhaps true in the details they give of individual artists, yet, broadly speaking, they may be based on facts, and that the Japanese owe to Koreans, or probably rather to Chinese who may have come through Korea, the first great advances which they made in the casting of bronze.

Besides the influence which the neighboring countries—China and Korea—had on the technique and motives of the Japanese bronze founder, we have also abundant evidence of the influence of the art of more distant regions. Among the treasures of the temple Horyuji (near Nara, Yamato) are several Indian statues in bronze of Buddhist saints and deities, and a curious ewer, which are said to have been in the possession of the temple from the date of its erection in the early part of the seventh century. The characteristic pose of the figures, the modeling of their features, and their jeweled headdresses have been frequently copied with more or less modification, and can be distinctly traced in many ancient Japanese statues, as well as in some of comparatively modern times. The ewer, a bronze casting of graceful form, is decorated with figures of winged horses of the form of the Pegasus of the ancients. According to Longperier (Gonse, "L'Art Japonais") it is undoubtedly Sassanian and of earlier date than the seventh century. An illustration is given of it in the "Handbook" of the ancient articles in the temple Horyuji, which will be found on the table. This ewer is of special interest, as, by the kindness of my friend Mr. Alfred Cock, I am able to show you a bronze incense burner, which has been modeled probably during the last century from one of the pegasi with which it is ornamented. Other bronzes of foreign origin are also to be seen in the treasure houses of several of the ancient temples in Yamato.

During the epoch, especially that part of it which has been styled the "Nara period" (the seven reigns during which Nara was the capital, 709–784), the great development in bronze founding was not the only advance made in the working of metals, but the art of incised and repoussé work in gilt copper, which had been practiced during the early Iron age, was brought to a stage of perfection beyond which it has never passed. A specimen of this work will be found on the table, and others are illustrated in the colored plates near it.

The examples contained in the following list I have selected as representative specimens of the art of bronze founding during this period (seventh and eighth centuries).

Date 690 to 702 A. D.—Three bronze figures representing a Buddhist trinity—Amitâbha, Kwanyin, and Mahâsthâma—that of Amitâbha being about 9 feet in height. They resemble the Indian examples at Horyuji in being originally gilt, but the bronze of which they consist is of a different composition, not containing zinc as an essential constituent.

Date 690 to 702 A. D.—A colored seated image of Yakushi (the healing divinity), about 6 feet high, with two attendant deities, cast of a copper-tin-lead bronze.

All the above are in the temple Yakushiji in Nara. Illustrations of

the latter group are given in two plates from the Pictorial Arts of Japan, by Prof. J. W. Anderson, which are on the table.

Date 705 A. D.—A spherical box of gilt bronze, bearing this date, which was found in a stone sarcophagus at Ten-ō-ji, near Osaka, is interesting, as it is probably the oldest dated piece of Japanese metal work in the country.

Date 708 A. D.—Bronze coins, "Wadō-zeni," the earliest coinage in Japan of which there is any record. According to Japanese histories copper is said to have been discovered in the country only in 698 A. D., but the accuracy of this statement, for many reasons, is open to doubt, and the discovery chronicled doubtless only relates to the finding of deposits of ore of more than usual extent and richness. The issue of this coinage, which was cast from copper from these deposits, was regarded as an event of great national importance, and to commemorate it the "nen-go," or name of the period by which the series of years are distinguished in Japanese chronology, was altered to "Wa-dō," which signifies Japanese copper. Besides these there were three other distinct coinages during this century.

Date 732 A. D.—The great bronze bell of the temple Tōdaiji, in Nara. Its approximate dimensions are, height, 13 feet; diameter, 9 feet; thickness, 8 to 10 inches. Its weight can not be easily determined, as its thickness is variable, but at the lowest estimate can not be much less than 40 tons.

Date 749 A. D.—Colossal image of Rochana or Vairotchana, in the temple of Tōdaiji, commonly known as the Nara Daibutsu.

This is the largest bronze figure in the country. It has not, however, been cast in one piece, but is constructed chiefly of numerous pieces of comparatively small size. Some of the lower portions have been cast by building up the mold on the parts already finished, but the greater part of the image consists of separate castings, which have been united by running in an alloy containing large proportions of tin and lead between their edges.

The following dimensions are those given on a wood engraving of the image—one of which is exhibited—sold by the priests of the temple, and may be considered as only approximately accurate: Height, 53.2 feet; breadth of face, 9.4 feet; length of eye, 3.9 feet; thickness, variable, 3 to 12 inches.

The figure is seated on a huge lotus flower with fifty-six external petals, each of which measures 10 feet 6 inches by 6 feet, and appears to be a single casting. Twice it has been partially destroyed by conflagrations and once by an earthquake. The present head, cast in the sixteenth century, is extremely ugly, destitute of any trace of the grace and refined expression of the earlier statues, and not at all in harmony with the ancient parts of the figure.

The authorities of the temple state that the image is composed of "shakudo" (a copper alloy containing gold). They also give the weights of the copper, tin, gold, and mercury, which were used in casting it, and

these statements have been repeated by many writers. They are altogether without any foundation in fact. I have had many opportunities of examining it, and although I never succeeded in getting a portion for analysis, yet from the streak, hardness, and color of the metal it is undoubtedly a variety of "karakane" (a copper-tin-lead alloy), and the gold and mercury said to have been used in its manufacture were simply employed for gilding its surface and not as constituents of the alloy of which it is cast. Four hundred and fifty tons of metal are said to have been used in its construction. If its average thickness is as much as 7 inches, and it is probably less, its weight must be less than 300 tons. The two following objects are examples of the smaller works of the period:

Date 749 A. D.—Bronze bell, with curious ornamental tongue, now in the temple Tōdaiji (Nara). Dated 2d day, 5th month, 1st year Tembyō Shō-hō. This is of importance, as it is another of the earliest bronzes which bears a date, but, unfortunately, no artist's name.

Date eighth century.—Lantern of bronze and incised gilt copper in the courtyard of the same temple. Its eight sides are decorated with Buddhist figures, conventional representations of hares and other animals, and fine arabesques in open work. A photograph of this lantern is exhibited.

A gong-shaped bell, suspended between two well-modeled dragons belonging to the temple Kō-buku-ji, in Nara, is attributed to this period.

A Buddhist image from the collection of M. Bing, of Paris, of the the same period.

FROM THE BEGINNING OF THE NINTH TO THE END OF THE TWELFTH CENTURY.

Near the close of the preceding epoch the court was removed to the city of Kioto, which from that time (794 A. D.) up to 1868 continued to be the imperial capital. This removal of the court was a severe blow to the art life of the ancient city; and the works and traditions of its old bronze founders soon appear to have been forgotten or neglected in the new metropolis.

From the beginning of the ninth until near the end of the twelfth century, a space of nearly four hundred years, we have a period of stagnation if not of decadence in all art, yet, strange to say, it embraces the golden age of literature, during which the famous classical romances were written. Its first half, as shown by these romances, was marked by effeminacy; during its second the country was plunged in civil war. The romances gives us but little information of the individual and art life of the people, and the pages of its histories are solely devoted to records of the jealousies and feuds of the great families of Fujiwara, Taira, and Minamoto.

Until near its termination we have no record of the erection of any temple of note or of the execution of any great art work; and I have been unable to find any examples of the art of the bronze founder

during the entire period, excepting two insignificant boxes for holding seals (dated respectively 998 and 1098 A. D.) and nine distinct coinages of bronze money (from 810 to 958 A. D.). After this last date even the coinage of money appears to cease, and is not resumed until 1457 A. D.—five hundred years afterwards.

THIRTEENTH CENTURY.

During the last years of the twelfth century, when peace was established throughout the country by the victories of Yoritomo, there are the first signs of a revival of the old art of the Nara period. From 1190 A. D. up to the date of his death (1198 A. D.), this remarkable warrior devoted all his energies to the cultivation and advancement of the arts of peace. Stimulated by his example and enthusiasm, the artistic spirit of the people was aroused from its dormant condition, and for nearly a hundred years we have a notable period of renaissance in art, a period chiefly remarkable in the history of bronze for the casting of that magnificent masterpiece the colossal image of Amitâbha, usually called the Daibutsu of Kamakura. This image, one of the finest examples of bronze founding, can not be adequately described by any word painting; it must be actually seen in the midst of its grove of conifers and evergreens to appreciate fully its grandeur and beauty, its soberness of design, and noble expression of majesty and repose. It stands alone and incomparable among all the chefs d'œuvre of Japanese bronze founders.

Although slightly smaller than the great Buddha of Nara, it far excels it in artistic execution. Like it it has been cast in segments, but these have been "burned together" with bronze of similar composition to that of the image itself, the exterior of the joints having been subsequently finished by chiseling.

Japanese histories relate that it was cast about the middle of the thirteenth century (begun 1252 A. D.) by Ono Goroyemon, one of the first bronze founders whose name is recorded. Its dimensions, taken from a woodcut sold to pilgrims who visit its shrine, are as follows: Height, 49 feet 7 inches; length of face, 8 feet 5 inches; breadth from knee to knee, 35 feet 8 inches.

The measurements of both this and the Nara Buddha, however, require revision; the heights in both cases are, I think, exaggerated, and should have 6 or 7 feet deducted from them. Its thickness is variable, ranging from 1½ inches to 3 or 4 inches, or even more in some of the castings, and its weight will not probably exceed 150 tons.

Other bronze images of the divinities of the Buddhist hierarchy, of less colossal proportions and of varying degrees of excellence, were made for the temples of Yamato and Kioto, one of the chief groups being a trinity for the ancient monastery Horyuji. Several bells were also cast, one at Kamakura being worthy of note, as the record given of it indicates the source of the metal from which they were occasionally made. It is said that 300,000 copper coins, which had been

collected by the priests of the temple, were melted down for casting it, and the metal being insufficient, the casting was a failure; 30,000 more coins were then collected for addition to the defective bell, when it was remelted. It is also recorded that copper coins were similarly melted up for casting Buddhist images and ornamental utensils, hence it would appear that it was not then deemed necessary to use a different alloy for bells and art castings than for coins.

FOURTEENTH AND FIFTEENTH CENTURIES.

During the fourteenth and fifteenth centuries we have again a period of decadence, with the exception of two short brilliant intervals, the first during the supremacy of the Ashikaga Shōgun, Yoshimitsu (1368–1493 A. D.), and the second during that of Ashikaga Yoshimasa (1440–1471 A. D.). For the greater part of this period the country was again in a state of unrest and intestine conflict, and the arts of peace found but little encouragement, excepting so far as they contributed to the needs of war.

Workers in iron are brilliantly represented by one of the greatest of the famous forgers of sword blades, Masamune, and by several distinguished armorers and smiths of the renowned Miochin family; but the bronze founder was not in request. His chief work during these two centuries was a colossal figure of the Buddha Vāirōtchana, cast during the time of Yoshimasa for the temple at Hase (Kamakura). I have not seen this image, but it is said to be an admirable casting and to measure 30 feet 6 inches in height.

Two bronzes which were exhibited at Nara in 1888 represent the smaller castings of the period, one an incense burner, which was presented by the hero Kusunoki Masa-shige (first half of the fourteenth century) to the temple at Hase (Yamato), and a war bell also given by him to the Emperor Godaigo.

SIXTEENTH CENTURY.

In the last decade of this century, after another period of civil war, the patron of art and culture is again a famous warrior, Hideyoshi (often known as Taiko Sama). Although then engaged in war with Korea, the closing years of his life were devoted to peaceful pursuits at home, and in imitation of Yoritomo at Kamakura, he erected a huge Buddha and a temple to contain it at Kioto. On the destruction of the image, which was of wood, by an earthquake only eight years after its erection, he contemplated replacing it by one of bronze, but the execution of this was delayed by his death (1598 A. D.), and was only accomplished by his son and widow sixteen years afterwards.

No large bronzes of importance appear to have been cast during this century. Two specimens of the smaller bronzes are exhibited, one a a figure of Yakushi (the healing divinity), belonging to my friend Mr. Alfred Cock, in which the deity is represented holding a crystal ball, an emblem of purity, in his left hand. It bears the names of its dedicators to the temple and the date 1569.

The other is a bell of the form known as "waniguchi," crowned with the figure of a tortoise encircled by the coils of a snake, kindly lent by my friend Mr. Harding Smith. It also bears the name of its dedicator and the date 1593.

Several specimens of dedicatory bronzes of this time are to be found not only in Buddhist temples but also in Shinto shrines. Two examples of the latter may be mentioned, although they are notable rather for the fame of their donors than for their artistic excellence; a gigantic bell of similar form to the last offered by Hideyoshi to the Shinto shrine at Nachi (Kyushu) and a large mirror (3 feet diameter) dedicated to the Tenjin Miya at Kitano (Kioto) by Kato Kiyomasa, one of Hideyoshi's noted generals in the Korean campaign.

I can not omit to show you on the screen a magnificent bronze in the famous Cernuschi collection in Paris, which is attributed to this period. It is supported on a pedestal of rich open work, and is decorated with gourds and an heraldic representation of the leaf and flowers of the Paulownia imperialis.

Another splendid example of "cera perduta" casting of this period is a group of egrets, standing upon an inverted lotus leaf, which has been kindly lent by my friend Mr. Alfred Cock.

SEVENTEENTH CENTURY AND FIRST HALF OF THE EIGHTEENTH.

In 1603 Tokugawa Iyeyasu, a man of remarkable ability, both as a warrior and as a statesman, succeeded to the Shōgunate, and by his wisdom and foresight established on firm foundations the Japanese system of feudalism, which, under the rule of his successors, gave absolute peace to the country for more than two and a half centuries, and resulted in an advance and development of the arts unparalleled in any previous age.

During the supremacy of these Tokugawa Shōguns, the painter, the lacquerer, the potter, and the founder were encouraged and stimulated as they had never been before to bring their respective arts to the highest point of excellence; and it is in no small degree owing to the works which they produced during this period that Japan owes the prominent position which she now so deservedly occupies in the world of art.

The first great works of the bronze founders of the seventeenth century were a colossal figure of the Buddhist divinity Rochana, in Kioto, to replace the wooden image destroyed by an earthquake in the previous century, and a huge bell for its temple.

The figure is said to have been 58½ feet high, and from the records regarding the first attempt to cast it, it would appear that it was cast in situ and in segments, the mold being built up on the parts already finished. It would thus, when completed, have been practically a single piece of metal. This attempt was a failure, as when casting the lower part of the head the wooden scaffolding was set on fire by the operations and the image partly melted. It was successfully completed in 1614, but only forty-eight years afterwards, like its wooden

predecessor, it was destroyed by an earthquake. According to official records its fragments were melted in 1668–1683 and cast into the bronze coins (Kwan-ei-tsu-ho) then current.[1]

This record is interesting, as it affords another proof that the alloy used by bronze founders did not differ much in composition, if at all, from that in use at the time in the mints for coins. I have analyzed these coins, with the following results: Individual coins differed considerably from one another in composition, the percentage of copper present varying from 69.8 to 86.8, a variation not greater, however, than might be expected from the nature of the alloy and the mode in which it was cast. Hence, in order to ascertain their average composition, 7,600 pieces were melted together, and the resulting metal was analyzed and found to consist of—

	Per cent.		Per cent.
Copper	77.30	Iron	1.01
Tin	4.32	Silver	0.06
Lead	15.33	Sulphur	0.52
Arsenic	1.14	Gold	Trace.
Antimony	0.31		
Zinc	Nil.	Total	99.99

We may hence not unreasonably conclude that this represents, approximately, the composition of the alloy which was used for casting the colossal Buddha.

The bell is the largest in Japan. Its dimensions are, approximately, height, 14 feet; external diameter at the mouth, 9 feet; thickness at the rim, 10¾ inches. In section these bells differ from European form in having the rim thickened internally, so that their mouths are constricted. (Fig. 1.) And it is this constriction which causes the gentle rising and falling tones which characterize the boom of all Japannese bells. It is hardly necessary to mention that these bells are not swung, neither are they furnished with tongues, but are rung by striking the outside by means of a beam of wood suspended from the bell tower and swung like a battering ram. The point struck is a low boss, which sometimes has the form of a lotus flower.

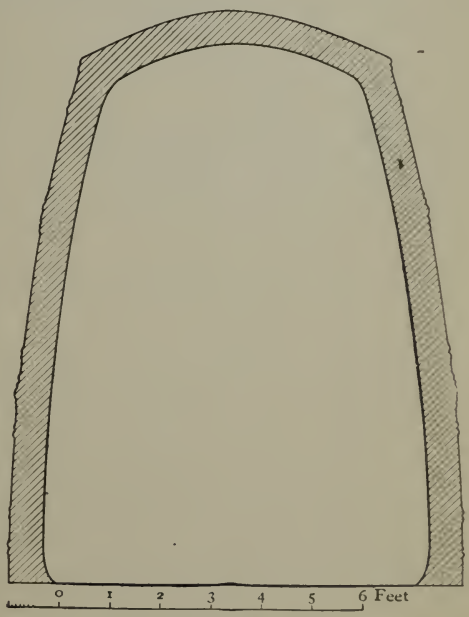


Fig. 1.

SECTION OF TEMPLE BELL.

[1] There is another record of the conversion of Buddhist statues in coins in 1450–1470.

Two other similar bells were cast during the first half of this century, seventeenth, details of which are given in the following table:

TABLE I.—*Approximate dimensions, etc., of four of the largest bells in Japan.*

Date.	Name of temple.	Height.		External diameter at the mouth.		Thickness of rim.	Approximate weight.
		Ft.	*In.*	*Ft.*	*In.*	*Inches.*	*Tons.*
Eighth century	Tōdaiji, Nara	12	9	8	10	10	49
1603 A. D.	Daibutsu, Kioto	14	0	9	0	10¾	56
1633 A. D.	Chion-in, Kioto	10	10	9	0	9½	*a* 43
1623–1649 A. D.	Zō-jō-ji, Tokyo	12	0	.....		.....	.....

a The weight of this bell is often erroneously given by writers as 74 tons.

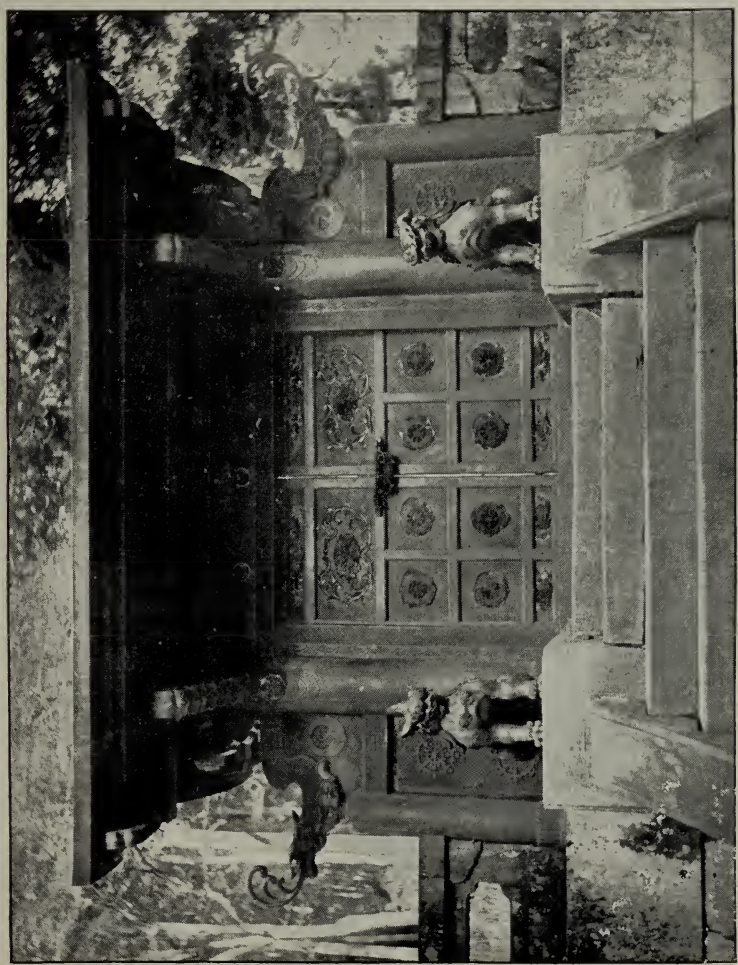
The exact average thickness of these bells can not be ascertained without special measurements, which are not permitted, but it can not exceed 8 inches, the thickness I have assumed for the above calculations, and may possibly be somewhat less. The casting of a large bell in old times in Japan was an important event, and was accompanied by religious ceremonies and popular rejoicings. On the day appointed for running the metal into the mold a grand festival was held at the temple in the grounds of which the founding operations were performed, and people of all ranks came from far and near with contributions, many with offerings of mirrors, hairpins, and metal ornaments, to be added to the bronze in the furnaces. On one occasion, that of the founding of the great bell of Zō-jō-ji, the Shōgun himself (Iye-mitsu) was not only present, but took part in the direction of the operations. In succeeding years the day was not forgotten, but its anniversary was celebrated by temple feasts.

The fame and repute of this "golden" period in the bronze founder's art does not however rest on the above castings, which are chiefly remarkable for their size and weight, but on those now to be described, many of which are masterpieces of design, modeling, and technical skill.

The oldest of these are the bronzes cast for the mortuary chapels and tombs of the early Tokugawa Shōguns and members of their families. At the famous mausoleum at Nikkō there are some grand examples, one of the most notable being the tomb of Iyeyasu (the first Tokugawa Shōgun, died 1604 A. D.), a fine casting in bronze, with bronze gates, distinguished by impressive simplicity and chasteness of design (Pl. LXV). In front of the tomb are the three ceremonial ornaments (Sangusoku) of the Buddhist altar, viz, a vase, incense burner, and candlestick, all of the severe style of the period.

The gates (Pl. LXVI) are splendid examples of bronze founding. Almost their whole surface is covered with delicate diaper and floral patterns, upon which ground the bolder ornamentation is molded in relief. These consist of representations of the "chakra," or Buddhist wheel of

BRONZE TOMB OF IYEYASU. DATE, 1617, A. D.



BRONZE GATES OF THE TOMB OF IYEYASU.

the law, and floral designs, most of which are coated with gold. In front are the two fabulous animals (Koma-inu and Ama-inu) supposed to represent lions.

The tomb of Iyemitsu (third Tokuwaga Shōgun, died 1649 A. D.) closely resembles that of Iyeyasu in form, but the reliefs on its bronze gates are simply Sanscrit characters in medallions. These tombs are situated in a grove behind the chapels and oratory, and their simplicity presents a striking contrast to the magnificence of these edifices, which are the most richly decorated shrines in the world. It is said that their plain and simple design is intended as a concrete expression of the Buddhist aphorism that "at death there is an end to all magnificence."

Numerous large standard lanterns (tōrō) of bronze (Pl. LXVII), contributed by the territorial nobles, who vied with one another in thus doing honor to their departed chiefs, line the courtyards of the shrines. Many hundreds of these "tōrō," which were favorite votive offerings of the wealthy both to Buddhist temples and Shinto shrines, were cast during this period of revival in bronze founding. They adorn the approaches and grounds of every temple of note in the country, those of Zō-jō-ji (Tokyo) alone number more than two hundred.[1]

Each group or pair differs from any other, yet in outline and decoration all are in harmony; and if no other examples of bronze founding were in existence, the gracefulness of form and fertility of design which characterizes all would alone mark their modelers and founders as artists of the first rank. It will be noticed that both of these in the illustration, although of the same general form, differ entirely in decoration.

The mausolea of other Tokugawa Shōguns also afford some fine examples of the bronze founders' art, notably the tombs of Iye-tsuna (1650–1680), and Tsunayoshi (1681–1708), at Uyena (Tokyo), and of Iye-nobu (1709–1712), at Shiba (Tokyo). They are of similar form to those at Nikkō, differing from them chiefly in the more elaborate decoration of their gates. Finely modeled dragons and the armorial badge of the Tokugawas ornament the gates of Iye-nobu's tomb, while in the tomb of Tsunayoshi—who was a noted patron of art—there is still a further departure from the simple style of earlier times, the symbolical combinations of the fabulous unicorn (Kirin) and pine tree, the phœnix (Hōō) and paulownia, and of the pine, bamboo, and plum being perhaps almost too lavishly employed.

Another important bronze at Nikkō, representative of the period, is a bronze column (1649 A. D.), termed sō-rin-tō, 42 feet in height, a form of the Indian "stupa," as introduced into Japan through China. Before removal to its present site it stood near the tomb of Iyeyasu, and was doubtless erected there in accordance with the Chinese superstitious beliefs in the efficacy of such structures in warding off evil influences and insuring the protection of Heaven. Besides these, four huge lotus

[1] Presented to the Shōguns Iyetsugu (1716) and Iye-shige (1762) by the territorial nobility.

petals, for the base of the image of the Daibutsu at Kamakura, were cast at the beginning of the eighteenth century (1717). A small bronze of the seventeenth century I am enabled to show you through the kindness of Mr. W. Cleverly Alexander; it is an incense burner, in the form of two rats, by Meiho. Also a candlestick for the Buddhist altar, decorated with a dragon coiled round its stem, from the collection of Mr. Alfred Cock. Two other candlesticks of the seventh century, or probably earlier, have been kindly lent by Mr. E. W. Hennell.

FROM THE MIDDLE OF THE EIGHTEENTH CENTURY UP TO THE PRESENT TIME.

Hitherto the skill of the bronze founders had been chiefly exerted in the production of colossal images and other huge castings for the temple of Buddha, and in giving a severe beauty to the forms and ornaments of utensils and implements for ceremonial purposes; but during this period, with the continuation of peace their art found a wider range in the designing of objects for secular use for the decoration of the home and the everyday needs of life.

Shortly before, the okimono, or ornament, a thing of no practical utility, but only of display, had been introduced, and this specially opened up to the artist a rich and unlimited field for the exercise of his ingenuity and skill in the art of ornament and design. The vase, too, formerly used only as a ceremonial vessel of the Buddhist altar, now became a necessary object for the adornment of private life, and in its form and decoration the artist was no longer hampered by the old traditions and rules of the church. The founders of this period hence are not chiefly notable, as in earlier times, for the works destined for the services of Buddhism or the embellishment of its shrines, although many remarkable castings were made, principally standard lanterns, dedicated as votive offerings to temples and monasteries, and torii, or gateways of Shintō shrines, but owe their world-wide fame to the skill and fertility of design exhibited in the objects above mentioned for household use, many of which are masterpieces of form and ornament. The following characteristic examples of Buddhist art can not, however, be omitted from my account of this period:

Date 1736 A. D.—A fine image of Sakya-muni, in the grounds of Zōjōji (Tokyo).

Date 1765 A. D.—A colossal figure of Kwanyin, 9 to 10 feet high, near the post town of Futagawa, on the Tōkaidō.

Date 1778 A. D.—An image of Sakya-muni (7 to 8 feet high?), in the courtyard of Jō-shin-ji, Tokyo.

End of eighteenth century.—An image of Amitâbha, formerly at Meguro, near Tokyo, now in the Cernuschi collection (Paris). Height from the base of the lotus flower to the top of the nimbus 14 feet 9 inches.

A figure of Amitâbha, seated on a lotus flower (date 1772), lent by

BRONZE LANTERNS AT NIKKŌ. DATE, 17TH CENTURY.

Mr. Alfred Cock, is an excellent example of the Buddhist art of the period.

The period is also marked by an important naturalistic monument in the schools of both pictorial and glyptic art.

They had up to this time followed the older men in basing their designs on the traditions of Buddhism and the forms and motives of Chinese and occasionally of Indian art, but now they began to break away from the trammels by which they were bound to these old conventional forms and motives, and to go to nature for their inspirations and models.

It should, however, be remembered that much as the works, especially of Chinese artists, were admired, mere slavish copies were never or rarely made of them; thus in the bronzes even of the early days, the figures of Buddhist divinities, there is a serenity of expression and graceful arrangement of drapery which we look for in vain in the masterpieces of Chinese art. Nearly contemporaneous with the establishment of the Shijo-rui—the school of naturalistic painting—in Kioto, by the famous painter Ōkyo, we find the art founders adopting these new motives and new modes of representing the old. Stiff geometric designs give place to those based on natural forms, and even in representations of the mythical dragon we see, as has been pointed out by Professor Anderson, "distinct evidences of direct study of snake form."

Students of natural objects, of plant and animal life, were now made, the designs of the naturalistic painters were followed, and an impulse was given to the art of bronze founding greater than had been known since the Nara period.

For a little more than three-quarters of a century we have another golden age in its history, during which a succession of brilliant artists, distinguished by marvelous technical skill and originality of design, worthily maintained the best traditions of the founders' art, and Japan attained a position in cera perduta casting which she had never reached before.

Two men, Seimin and Toün, stand out prominently during the closing years of the last century and the first quarter of the present. Others, among whom should be mentioned Harutoshi, Kunihisa, Kamejo, Teijo, Taüchi, approach these great masters in skill, even occasionally proving their equals. The work of these famous artists is well represented by the specimens on the table, the most important of which are from the collections of my friends Mr. Alfred Cock, Mr. Mills, Mr. Alfred Parsons, and Mr. J. M. Swan, and by Pl. LXVIII, fig. 1, a group of tortoises from the collection of Mr. J. M. Swan, and Pl. LXVIII, fig. 2, a brazier from the collection of Mr. Alfred Cock.

In examining their works it will be noticed that, as among the painters, several were specially distinguished for their skill in the representation of certain motives—Sosen as a painter of monkeys, Ganku

of tigers, Ōkyo of carp, etc.—so among the founders several are similarly renowned; thus Seimin chiefly owes his fame to the perfect modeling of his tortoises, Toün Sōmin for the vigor and life expressed in their dragons, and Kamejo for the delicate and truthful rendering of her quails. It is needless to say that they did not confine themselves to these, but executed other works not less demonstrative of their skill.

The human figure, however, does not form part of their naturalistic studies. The forms and movements of lower animal life are expressed with a truthfulness which has never been surpassed, but in representing man they seem rarely to have been able to free themselves from the conventionalities of the art dogmas of the old Sinico-Japanese schools, and seldom show even traces of that close observation of nature which characterizes their other works.

One of the finest examples is a seated figure of Ban-kurobé in the garb of a pilgrim, cast by Murata Kunihisa, in 1783 (now in the famous Cernuschi collection, Paris). Pl. LXIX.

Portrait statues are of extreme rarity, those representing famous personages being merely conventional creations which are supposed to portray the type or class to which they belonged rather than the individuals themselves. This example would seem to be one in which an attempt has been made to produce with truthfulness a characteristic likeness of the man whom it is intended to commemorate.

With the death of the last representative of this brilliant group of art founders near the end of the first half of the present century, the art gradually passed into a stage of decadence, the lowest depths of which it but recently reached, and from which it is only just emerging.

Vast numbers of bronzes have indeed been cast, but they are too often of meretricious design and tawdry ornament, or debased copies of the creations of Seimin, Toün, and their distinguished contemporaries. Fortunately there are a few notable exceptions to this later statement. In the first decades of the second half of this century Dōsai, Gidō, Sōmin, Joun, Tanchosai, Toryusai, and Izan (specimens of whose works are exhibited) did much excellent work, and ably sustained under considerable difficulties the reputation of their famous predecessors. Among more recent founders, a distinguished position should be given to Suzuki Chokichi (now living), whose well-known magnificent example of cera perduta casting is in the South Kensington Museum. It is an ancient incense burner with doves and peacocks, the doves especially being masterpieces of modeling, and an embodiment in bronze of the highest developments of the naturalistic school, of which Chokichi is an earnest and ardent follower.

And I here should like to say a word on the excessive crude and vulgar ornament which disfigures too many modern Japanese bronzes. Such ornament is never found on any vase, brazier, or other object intended for use by the Japanese themselves, but is confined to those articles specially made for sale to foreigners. (The collection exhibited

FIG. 1.—BRONZE GROUP OF TORTOISES BY SEIMIN.

FIG. 2.—BRONZE BRAZIER BY TOÙN. BUNSEI PERIOD, 1818-26, A. D.

BRONZE FIGURE OF BAN-KUROBÉ. CERNUSCHI COLLECTION, PARIS.

to illustrate the forms and ornaments of Japanese bronzes before the opening of the country to foreign trade amply demonstrates this.) These are all veritable "pot-boilers" cast by men often capable of doing better things, who earn more by the production of these vulgar monstrosities for exportation than others who still endeavor to follow the simple canons of Japanese art. Modern Japanese bronze founders, like their brethren in pictorial art, hence work in an adverse environment, and under many disadvantages unknown to their predecessors. In the early centuries religious enthusiasm, the quiet seclusion of the monastery, and the patronage of a powerful priesthood stimulated, fostered, and supported the old artists in their work, so that all their powers were put forth in the execution of the grand masterpieces of those times.

In later times the same result was achieved under the system of feudalism which prevailed in the country. Workers in bronze were attached to the courts of the greater daimyos (territorial noble); their incomes were secure, they were free to work out their designs as they wished, and need only do so when they felt inspired.

During recent years the Emperor has done much for the encouragement of a select few of the chief art workers in bronze in the revival of their old art, the result being that some of the objects of modern work which adorn the imperial palace are of extreme beauty, and equal those of the older masters in gracefulness of form and sobriety of ornament. But for the great majority there is no such patronage, yet the bronze founders must live, and to live means for too many that they must waste their talents in producing work in designing which they are hampered by the demands of commerce and the chief, or rather sole, end of which is merely pecuniary remuneration. Up to the eighteenth century we rarely find the name of the artist or founder attached to any bronze. Most of the existing specimens of the earlier bronzes were made, as we have seen, for use in the ceremonies and ritual of the Buddhist religion, and were not usually allowed to bear any name, excepting when they were ex voto offerings, and then only the names of the donors. The records of the temples are also silent, with few exceptions, even on the authorship of the grand masterpieces to which they often owe their popularity and fame. The dedicators alone are remembered and the artists forgotten. Being almost invariably men of plebeian origin, the bronze founders occupied a lower status in life than the caligrapher, painter, or armorer, and their lives have not been thought worthy of record. All the knowledge we have of even the great masters of the last generation is derived solely from their works

Several charming specimens of both the larger and smaller bronzes, especially of the latter, as late as the last hundred years, are unfortunately not signed (see especially the candlesticks of fine open work lent by Sir Trevor Lawrence), and many of equal merit are signed by artists whose names do not appear in the lists of noted bronze workers. So

that the materials for a history of the men themselves, such as has been compiled of their fellow-artists the painters, do not exist; and are but scanty and incomplete, even for a record of their works.

This will conclude the first part of my paper. I must apologize for the fragmentary character of the account I have attempted to give you of the rise and development of bronze founding in Japan, and will ask you to regard it merely as a collection of notes which may be of use in the compilation of its history when further materials are brought to light. I have purposely omitted from it the consideration of the guards (tsuba) and other furniture of the sword, because they are more particularly the work of the chaser and carver of metals than of the founder, and also because the subjects of their designs and their technical execution extends over such a wide field that a special paper would be required for their adequate treatment.

Lantern slides were shown of specimens dating from 1785 to about 1838 A. D.:

Eighteenth century.—A hawk. From the magnificent collection of Japanese bronzes presented by M. Cernuschi to the city of Paris.

1783.—A statue of Ban-kurobé in the garb of a pilgrim. By Murata Kunihisa. Height 2 feet 6 inches, measured from the top of the pedestal. Cernuschi collection.

1824.—An incense burner. By Ta-uchi and Yaki-yajiro. Nearly 6 feet high. Cernuschi collection.

Beginning of the nineteenth century.—A group of tortoises. By Seimin. Kindly lent by Mr. J. M. Swan, A. R. A.

A brazier. By Toün. Kindly lent by Mr. Alfred Cock. Both of these are masterpieces of modeling and casting.

An incense burner. By Toün. About 3 feet in height. Cernuschi collection.

THE TECHNICS OF JAPANESE BRONZE FOUNDING.

Several methods of casting metals have been practiced by the Japanese. In the earliest times molds of stone, in which the shape of the object was cut, sufficed for the simple forms of their ancient weapon; and although they are no longer employed in the casting of bronze, their use still survives in the casting of lead for some industrial purposes, and of small silver bars, which have subsequently to be worked with the hammer into jewelry and ornaments. Somewhat later, molds of clay were introduced, probably by Chinese, and it is almost certain that contemporaneous with their adoption the method of cera perduta casting was first practiced.

Casting in molds of sand or loam is also of an early date. In 708 A. D. it was in use in the mint for the production of bronze coins. At present it is chiefly employed for small or flat objects—plain or only roughly ornamented—and for castings for industrial uses.

These methods have been followed in some form or other by almost

all nations, but I may mention en passant—although it hardly comes within the scope of this paper—another method which is essentially Japanese, i. e., the casting of refined copper in canvas molds in hot water. Specimens of copper so cast for the use of the bronze founder are on the table. It is also used occasionally, but rarely, for silver, never for bronze.

One mode of casting they have never practiced, that is, what is called the "ascending" method, in which the ingates are so arranged that the molten metal enters the mold at its base and gradually rises and fills its cavity. They have, however, introduced a modification in the "descending," or ordinary method—which will be described later—to minimize some of its disadvantages, the chief of which are, as is well known to founders, the occasional formation of "cold sets"[1] on the core and sides of the mold, and unsoundness in the castings due to the entanglement of air in the streams of metal when falling from the top of a high mold.

It will be seen from the descriptions which follow of the operations of the Japanese bronze founder that, while in their general features they have much in common with those of the bronze founder in Europe, they present some differences of greater or less importance, differences which are chiefly found in certain details of manipulation which are the results of the conditions under which the Japanese founder has worked, the composition of his chief alloy, and the nature of his training.

Before proceeding to consider these operations, we will first glance briefly at the founder himself. He was—as I have stated above—almost without exception of the plebeian class of the people, and although many at various periods were men of marvelous ability and of the highest merit as artists, yet they seem never to have ranked higher than artisans. Several sculptors in metal, who were specially distinguished for their skill in the design and ornament of the furniture of the sword, and many noted smiths, forgers of famous blades and of armor, were indeed elevated above this grade, and had the honor of receiving complimentary titles in recognition of their ability; but I have not succeeded in finding a single example of an art founder having been similarly honored.

No special courses of study, such as were followed by painters, were open to him. A knowledge of the principles and practice of his art had to be obtained under a system of apprenticeship, which had much in common with that in vogue in Europe during the latter part of the Middle Ages, and in which drudgery and household work absorbed not a little of his time. As an apprentice he was bound to serve his master for a fixed term of years, during which his duties were not only to assist

[1] "Cold sets," metal which has been splashed up against the sides of the mold or core, has solidified there, and not afterwards united with the main mass of metal, owing to a film of oxide which has formed on its surface.

in the actual work of the foundry and studio, but also to attend to the personal wants of his master. He lived in his master's house, was fed and clothed by him, and became in fact a minor member of his family.

During his apprenticeship he was taught every branch of the founder's art, from the rough work of mixing and tempering clay for molds, and the making of crucibles, to the highest stages of designing and modeling objects in wax and of subsequently casting them in bronze. After long years of faithful work, if distinguished by special ability, he might be selected by his master as his successor, and at least was entitled to receive from him a modest sum of money, either as a loan or a gift, sufficient to enable him to establish a small atelier of his own.

The foundry of the artist always now forms part of his dwelling house, and doubtless this was the case in earlier times. Special rooms are set apart for drawing, modeling, and the preparation of the molds, the rougher operation of molding being carried on in sheds at the side of the garden or yard. The foundry itself, in which the metal is melted and cast, is also situated in the yard. A special feature in many is the well-arranged garden on which the modeling rooms open, so that the artist works amid cheerful surroundings, which must influence his work for good. The working staff consists of the artist, his apprentices, the members of his family, all of whom, even the children, assist in some of the operations, and one or two workmen. Castings from models designed by the artist himself form sometimes the sole work of the foundry, but generally other work is undertaken, and castings are then made of objects which have been modeled by other artists who send their molds ready prepared merely to be filled with metal.

The Japanese processes of casting bronze and the appliances and materials used, which I shall now endeavor to describe, are those which I have seen from time to time in the art foundries of Osaka during my residence there, and I have to ask for your indulgence if I burden you with some dry and apparently trivial metallurgical details which may be uninteresting to those who are not specially concerned with the melting of metals. I will, however, try to deal with them as briefly as possible.

This part of my subject may be conveniently divided into the following sections:

1. Preparation of the mold and core. In clay; in sand or loam.
2. The furnace and foundry appliances.
3. The operations of casting.
4. The alloys used.
5. Stains and patinas.

1.—PREPARATION OF THE MOLD AND CORE (IN CLAY).

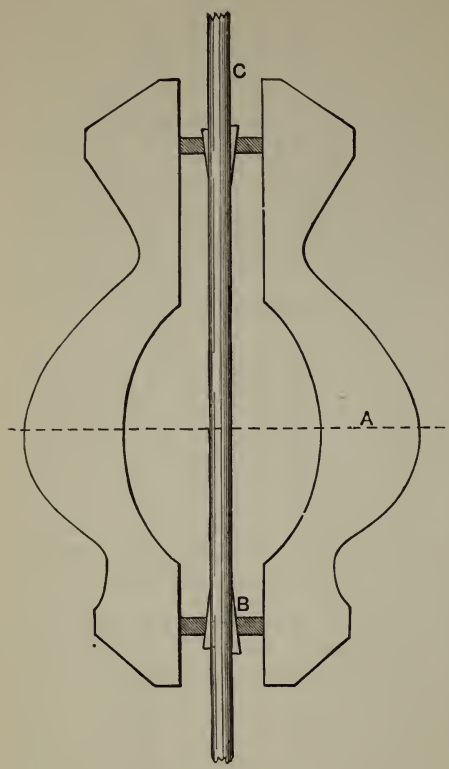
The materials used for modeling and the preparation of the mold and core are as follows: Vegetable wax, prepared chiefly from the fruit of Rhus succedanea; it possesses great fluidity when melted, but has the

disadvantage of being extremely brittle in cold weather; beeswax; resin, obtained from various conifers, chiefly Pinus massoniana and densiflora; clay, raw and burned; river sand; chopped rice straw; rice husks. Various mixtures of vegetable wax and resin, to which beeswax is sometimes added, also of beeswax and resin alone, are used for modeling, according to the character of the design of the object, and the extent and nature of its ornament. For castings of the highest class, and especially for those with delicate lines and forms or ornament, the latter mixtures are always employed, the former being used only for large or common works of simple shapes, with rough or little decoration. The clays used in Osaka and Kioto are obtained from the hills of decomposed granite in the neighborhood. They are extremely plastic, but are not very refractory, as they contain considerable amounts of the alkalies.

Great care is devoted to their "tempering," which is effected by many months, even years, of exposure to the weather, with frequent turning over in the yard or sheds of the foundry. They are always mixed for use with varying proportions of old fire bricks in both fine and coarse powder, and when employed for large or solid cores with coarsely chopped rice straw, rice husks, and river sand. Special importance is attached to the use of the oldest clay for the preparation of molds and hollow cores, as it has been found by experience that they are then much stronger and less liable to crack than when made of newer material. The amount of rough usage these molds will bear without injury is very surprising. I have seen them rolled over the rough floor of the foundry from one end to the other and yet yield perfect castings. The core, which is one of the most important parts of the mold, possesses some curious features which are specially characteristic of Japanese foundry practice. For small figures it is generally solid, and these differ but little from those in common use everywhere; in other cases it is always hollow.

The hollow core—this is used by the Japanese whenever possible—is of two kinds, in one of which it is closed at one end; in the other both ends are open. The chief peculiarity of the former is its thinness, compared with similar cores in Europe, otherwise it does not differ much from them. I will hence only describe in detail the latter, or open core, as it has many peculiarities, and is particularly distinctive of the methods of founding adopted by artists. In its usual form its thickness is not much, sometimes not at all, greater than that of the outer shell of the mold; in fact, it merely forms its inner wall; and, in order that this kind of core may be employed almost all castings, even of vases, braziers, and similar objects, are cast without a bottom, the bottom being cast separately and subsequently attached by means of solder. It is usually fashioned on a wooden framework, the parts of which are ingeniously arranged, so that it can be withdrawn as soon as the entire mold has been finished and dried. This

framework, an example of which is shown in plan and section in fig. 2, is constructed as follows: A sufficient number of flat strips of wood, A A, resembling templates, are prepared, their external edges being roughly cut to the shape of the interior of the article to be cast. Two circular disks of wood, B B, each in two segments, and furnished with a central hole, are also prepared to form the top and bottom of the frame. The above strips are then arranged around the peripheries of the disks, and are kept in position by means of wires or cords. A bar of wood, C, of suitable length, is then passed through the aperture in the disks, and the framework is firmly attached to it by wedges. The object of this bar is to enable the core to be moved about or revolved, and so to facilitate the work of the modeler. Thin strips of bamboo, or sometimes a cord of straw, or both, are now bound round the exterior of the frame. The core is then molded on it to the proper thickness with a mixture of burned and raw clay, and rice husks applied in several layers, the lower layers being coarser and more porous than those above them, and the exact form is given to it by one or two final coatings of clay mixed with sand. After the core has been dried the vase or other object is modeled on it in wax of the proper composition (see above). Wooden or metal stamps are sometimes used for molding Chinese characters and parts of the ornament, but only for the commonest articles, the whole of the modeling of all others being performed by hand.



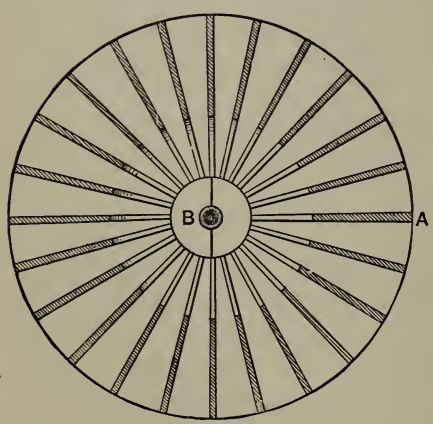


Fig. 2.
REMOVABLE CORE FRAME.

A drawing or rough model is sometimes used by the artist for his guidance, but not unfrequently he works without either, and even when using them he does not merely copy their lines or the exact details of their ornament; in fact, often he departs from them altogether, if he feels that by a modification of their outlines or decoration the beauty of his subject may be increased.

In preparing this model on the core he exerts his utmost skill; no plaster casts are made from it; if the casting is a failure, his work—it may have been a masterpiece—is lost, but if successful, it bears in imperishable bronze all the subtle and delicate touches of his hand. When the model is completed the ingates or openings C C C C and D D D (fig. 7), through which the metal is poured into the mold, and the necessary outlets for the escape of the air and gases and for running out the wax, are molded on it, and in some objects pins of bronze are inserted in it to aid in keeping the core in position. The ingates for castings of moderate size, especially for those of considerable height, are not placed only at the top of the mold, but also in one or more tiers around its sides. Thus in fig. 7 we have four ingates (A A A A) a little above the middle, and three (B B B) on the top of the mold. The object in thus placing them being to diminish some of the disadvantages of the "descending" method of casting which have been previously alluded to. For thin castings this practice is extremely successful, a much smaller proportion being defective from vesicular structure caused by entangled air, from burned patches. and from "cold sets," than when the ingates are all at the top.

The wax model is now coated with a thin layer of fine clay, applied with a brush with great care. After drying, other layers are similarly applied, until the crust is sufficiently thick to permit additional layers of somewhat coarser clays to be put on with the hand and tools, to give the requisite strength to the mold. The mixture of clays for the first layers is very carefully prepared, and is sometimes mixed with finely powdered porcelain, to prevent them from being melted by the molten metal. The formation of a fused crust on the casting, which is always difficult to remove, destroys its surface, and mars the sharpness of its designs, is thus avoided.

The mold is then dried very slowly in a warm part of the foundry. When dry, the wooden core is removed and the wax is then melted out by means of a carefully regulated charcoal fire, by which both the hollow core and the outside of the mold are heated, and at the same time all traces of moisture are expelled and its walls baked hard.

PREPARATION OF THE MOLD (IN SAND OR LOAM).

Molding in sand or loam has not been extensively practiced by the Japanese for artistic castings, with the exception—as I have stated above—of flat objects, such as coins and mirrors, and others of simple forms in which no parts of the ornament are in undercut relief. Even

in many cases in which the use of a sand or loam mold was perfectly admissible, a clay mold seems to have been preferred because it could be heated before it was filled with metal, a point to which much importance is attached. Their methods of molding in sand do not differ greatly from ours; I will hence only describe that followed in the old mint about sixty years ago, where this kind of molding was brought to a high state of perfection for casting the bronze coins known as "tempo."

Specimens of these coins and of mirrors cast in the same way are exhibited.

The model, or "mother" coin as it was termed, was prepared in bronze, either by the "cera perduta" method or by cutting and engraving. For mirrors and similar objects this or a model in wood was used as the "pattern," but for coins, when many had to be cast, the "patterns" were prepared first by casting from the "mother" coin what were termed "seed" coins in pewter, and then from these the actual working "patterns" in bronze.

Lantern slides were shown illustrating the operations of molding and casting in the old mint in Yeddo in 1835, as follows:

Filling the mold frame with sand.

Molding by means of the metal patterns.

Smoking the molds.

Pouring the bronze into the vertical sand molds, see Pl. LXX.

The "flask" or frame for holding the sand was of wood, without transverse or longitudinal ribs. It was placed on a flat board on the floor of the molding room, where it was filled with damp sand—the sand being well trodden to consolidate it—the excess was scraped off and the surface made level and smooth. Upon this surface, which was first dusted with charcoal powder, two bronze rods to form the ingates and main feeding channels were placed, and on each side of them a row of the metal "patterns," all being carefully pressed into the sand. Another frame was then placed upon it and filled with sand, which was also very carefully trodden. The frames were then separated, the "patterns" removed, and a small channel was cut from each cavity in the mold leading to the main channel. They were now placed on an open frame and their inner surfaces were smoked with burning pine wood held below them in a brazier. After being again fitted together they were placed between two boards and firmly braced up, and then set up vertically in the melting room to receive the bronze.

2.—THE FURNACES AND APPLIANCES OF THE FOUNDRY.

The furnaces and appliances which are used by Japanese artists for melting and casting bronze are of a very simple character. They consist of a series of cupola furnaces in segments, several crucible furnaces, and two kinds of blowing machines.

Reverberatory furnaces were not employed by the old founders, but

POURING THE BRONZE INTO A VERTICAL SAND MOLD.

during recent years several have been erected from my designs in Government and other establishments, chiefly, however, for the production of ordnance and castings for industrial purposes.

When small castings only are required the bronze is generally melted in crucibles, but for those of larger dimensions a cupola furnace, or more than one, is always employed.

A typical cupola furnace, which is that which was actually used in

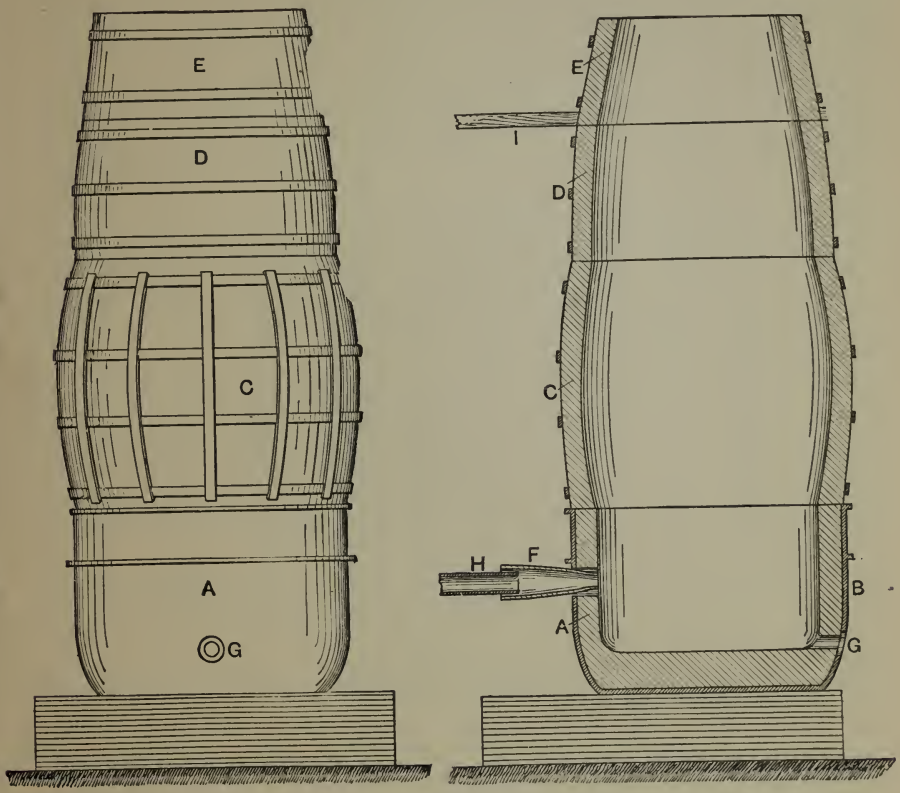


Fig. 3.

TYPICAL CUPOLA FURNACE FOR MELTING BRONZE.

A, lower segment of the furnace; B, iron pan inclosing the furnace; C, D, E, upper segments; F, twyer; G, tap-hole; H, pipe leading the blast from the blowing machine; I, charging.

the casting operations to be described subsequently, is represented in fig. 3.

It is very ingeniously constructed of cylindrical segments. The lowest, which forms the hearth, consists of a cast-iron pan lined with fire clay and a coating of brasque, composed of clay and charcoal. It is furnished with an aperture, G, in front, for tapping out the metal, and another at the back for the insertion of the twyer, through which

the blast is introduced. Each of the other segments consists of a cylinder of fire bricks or slabs, cemented together with fire clay, and firmly bound with iron bands. The number and size of these segments used in erecting a cupola depends on the quantity of metal it is intended to melt at each charge, and as a considerable number of various sections and degrees of taper are kept on hand, any form can be given to the interior of the cupola. In all well-arranged foundries these segments, with their accompanying hearths of various sizes—generally from 1 foot to 2 feet 3 inches in diameter—are always ready, so that a furnace can be built up without delay at any time for either large or small meltings.

The cupola is erected by placing the hearth segment on a platform of brick about 1 foot high, so that the tap hole may be of a convenient height for tapping. Upon this segment one of the others is placed and luted to it with fire clay; another is placed on this and similarly luted, and others are added if necessary until the furnace is of suitable height. The advantages which this method of erecting cupola furnaces possesses for small foundries, where the work is of an irregular character, and where castings are often urgently needed which are too large for crucibles and too small to justify the lighting up of a large permanent cupalo, are self-evident.

There is only one twyer, and this is the chief disadvantage of the larger sizes of these furnaces, as it causes an unequal distribution of heat in the zone of fusion, the results of which are undue volatilization of lead and zinc in the overheated spaces and an unnecessary waste of blast and fuel. There is no special charging door, the fuel and metal being simply thrown into the open top of the furnace.

Portable furnace for melting bronze.—Another furnace which is not now in use in Japan, but is still employed in China, resembles the hearth segment of the cupola I have just described. It is, however, made light and portable, stands on three feet, and is fitted with sockets in its sides, into which long handles are inserted, so that it can be carried by two or four men. It is placed in front of a bellows, as shown, and then charged with charcoal and bronze. When sufficient of the latter has been melted it is carried to the mold, the fuel raked off, and the molten metal poured through a beak-shaped opening in its side.

For objects of small size and complicated forms and of delicate modeling the bronze is melted in crucibles in small furnaces, which, like the cupola, are worked by means of a blast. This form of furnace consists of a simple cylindrical chamber, with a lining of fire clay, generally partly embedded in the ground of the melting room, and fitted with a movable clay cover. Its sides are pierced with four or six or more holes, about 3 to 5 inches above its base, for the admission of the blast. The fuel used is charcoal. Recently air furnaces connected with chimney stacks, similar to those of Europe, have been erected in many

foundries, but the above form is still in extensive use in the melting rooms of artists.

The crucible used (fig. 4) consists of a thin inner crucible of porcelain inclosed in an outer one of fire clay; and its construction affords a good example of the ingenuity of the Japanese in overcoming the difficulties arising from the nonrefractory character of their fire clay. As has been pointed out already, granitic clays, not very infusible, are alone available for metallurgical purposes in Japan, porcelain clays being expensive and reserved for the potter. If the crucible were made entirely of the former it would soften and crack at intense heats; hence it is lined with a cup of difficultly fusible porcelain just at that part where, owing to the position of the twyers, the temperature of the furnace is extremely high; so that, even if the outer part is partially fused or destroyed the metal will not be lost, but be retained by the porcelain cup within it.

Blowing machines.—The machines used for producing the blast can not be passed over without notice. They are of two kinds, both of which are peculiar to the East, and although defective in many respects when compared with the more perfect forms of blowers, such as Baker's and Root's, in use in this country and also in the large commercial and Government works in Japan, yet their convenience and efficiency is sufficiently great to enable them to hold their own in the art foundries, where, indeed, they are still universally employed. One of these, called the "fuigo," is shown in the lantern slide. It is used for producing the blast for the crucible furnace previously described, and also very extensively for other metallurgical operations, such as copper, lead, and tin smelting. As the Chinese form, with which it is almost identical, has been described more than once, I will not trouble you with a detailed account of it. It is essentially a rectangular wooden box, fitted with a piston, which is worked horizontally, and with four valves so arranged that it is double-acting, a blast being produced by both the forward and backward motion of the piston. The air chamber generally measures about 3 feet by 1 foot 10 inches by 7 inches.

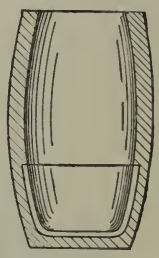


Fig. 4.
CRUCIBLE FOR MELTING BRONZE.

The other blowing machine, which is called "tatara," appears to have escaped the observation of foreign writers, as it has not hitherto been described. Fig. 5 represents it in plan and sections. It consists of two air chambers A A, in some cases constructed of wood, in others of clay with merely a lining of wood at their sides. The bottom of each chamber is an inclined plane sloping from a central ridge. The top of this ridge is fitted with metal bearings, in which the axle of the pressure board B works. The pressure board is made of wood and is fitted with two valves, C C, opening inwards, one being placed at each end. Its edges are sometimes lined with a packing of fur or feathers, so that it

may fit closely to the sides of the chamber and leakage of air be prevented.

About eight or ten persons are required for working one of these machines in melting bronze, and often the whole of the artist's household—men, women, and children—aid in the operation. A rocking motion is given to the pressure board by the workers stepping alternately on and off either end (fig. 6), and the air is thus compressed first in one chamber, then in the other, and passes to the blast outlet E

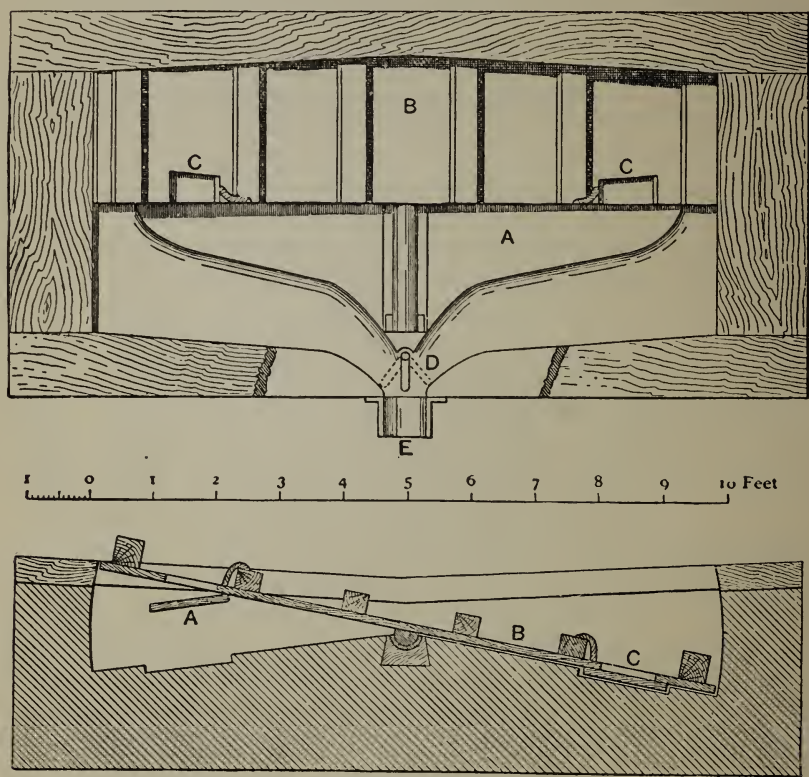


Fig. 5.

JAPANESE BLOWING MACHINE, CALLED "TATARA."

A, A, air chamber; B, pressure board; C, C, valves of pressure board; D, blast valve; E, blast outlet.

through a channel at the bottom and front of each. At the junction of these channels with the blast outlet a flap valve, D, closes either channel when the opposite half of the pressure board descends. The workers are aided in stepping on and off by ropes hanging from the roof, which they grasp with their hands, and in keeping time—and the efficiency of the machine depends greatly on this—by singing songs which have been specially composed for them.

The blast is intermittent, irregular in pressure, and deficient in

volume; and the effective power of a machine worked by eight men does not exceed 1 ton of cast iron melted per hour, the cost of the labor, however, being only about 8 pence.

3.—THE OPERATIONS OF CASTING.

The metal used for the charges of a cupola furnace when a "cast" has to be made consists either of old bronzes and defective castings, or more generally of a mixture of these with new alloy. The separate metallic constituents of the bronze, viz, copper, tin, lead, or zinc, do not form part of these charges, but the alloy is previously prepared by melting them together some days beforehand. The alloy then obtained is cast into thin plates, which are broken up while hot, and the frag-

Fig. 6.

WORKING THE BLOWING MACHINE, CALLED "TATARA."

ments are used for the casting charges. When crucibles are used, the alloy is however frequently made at the time of casting, although for castings of special importance bronze which has already been once or oftener cast is always preferred.

For my description of the operations of casting I have selected the casting of a brazier in the mold shown in fig. 7, as it is a typical example of Japanese practice, and I was present in the foundry during the whole of the operations.

The bronze was melted in the cupola furnace (fig. 3). Charcoal was used as fuel, and the blast was produced by a "tatara" worked by eight persons.

From an early hour in the morning and while the melting was proceeding the foundry staff was engaged in preparing the molds for the reception of the metal by heating them to redness. This was effected in the following manner: The mold (fig. 7) was placed on five or six bricks, H H, to raise it above the earthen floor of the melting room. Its ingates, C C C C and D D D D, were closed with stoppers of clay and the conical tubes, F F, were fitted over its air outlets, E E, to prevent any fuel from falling into them. A wall of fire-clay slabs, G G, was now built up around it, the slabs being kept in position by hoops and bands of iron and an external luting of clay, a space about 3 inches wide at its narrowest part being left between the inside of the wall and the outside of the mold. A charcoal fire was then made on the floor below the mold, and the space between the wall and the mold was completely filled with burning charcoal, which was mixed with fragments of bricks and crucibles to prevent the heat from becoming too intense. The interior of the core was also partly filled with the same mixture, and two clay tubes were fitted above it to serve the purpose of chimneys. The temperature of the interior was regulated by partially or entirely closing the upper openings of these tubes with tiles. The mold was kept at a red heat for more than two hours, by which time the metal was nearly ready. The wall of clay slabs and the draft tubes were now rapidly taken down and the fire was raked away. The bricks H H, supporting the mold, were carefully removed, and the holes through which the wax had run out stopped up with fire clay. During their removal the floor below was sprinkled with water and softened by shoveling, and on this the mold was allowed to rest. Large stones were now piled around its base to steady it and the stoppers were removed from the ingates. The ingates, of which there were seven—four about the middle of the mold and three at the top—were fashioned in the form of small cups of fire clay about 2 inches in diameter, each having three apertures, half inch in diameter, opening into the channel leading into the mold.

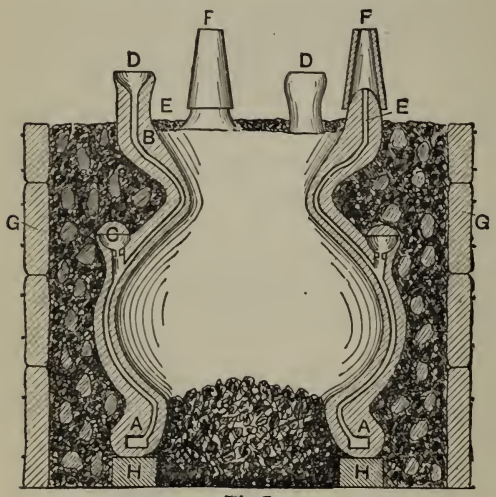


Fig. 7.

MOLD WITH OPEN CORE, SHOWING THE MODE OF HEATING IT.

A, A, outer wall of the mold; B. B, inner wall of the mold or core; C, C, lower ingates; D, D, upper ingates; E, E, vents or outlets for the air and gases; F, F, fire-clay tubes; G, G, fire-clay slabs; H, H, firebricks; I, I. ignited charcoal.

The mold was now ready for receiving the metal. On looking into it

through one of the ingates it was seen to be a dull red heat. The bronze was then tapped into four iron ladles, each of which was held by a workman, and a small quantity of wood ashes was thrown upon its surface. The workmen then took up their positions opposite the lower ingates and on a signal being given poured the contents of their ladles simultaneously into the mold. The quantity of metal had been very accurately estimated, as it just reached about half way up each ingate. These ingates were then closed with clay stoppers luted in with fire-clay. Three of the ladles were filled again and poured in the same manner as before, but into the upper ingates, completly filling the mold. During pouring very finely powdered rice bran was thinly sprinkled on the metal as it flowed from the mouths of the ladles. The mold was allowed to stand for six hours before breaking it from off the casting. Several other smaller molds were then filled in a similar manner, and as one ladleful of metal was sufficient to fill each, they had only one ingate and one air outlet. While the bronze was being poured into them they were rather vigorously tapped with a short stick to dislodge any air bubbles which might have adhered to their sides.

For castings of very large size ladles are not used, but the bronze is run from one or more of cupola furnaces, first into a receptacle lined with fire clay, and then from this through an aperture in its bottom into the mold. The outflow is regulated by means of a plug, so that a considerable depth of metal is always retained in the receptacle in order that scoriæ and oxidized scums may be prevented from entering the mold. To prevent oxidation as far as possible, the surface of the metal is kept carefully covered with a layer of charcoal or of partially carbonized straw.

A subsidiary but often necessary part of the founder's work, and one in which the Japanese exhibit very great skill, is the repairing of any defects that the castings may show on their removal from the molds. Thus, for example, occasionally the rim or other part of a vase may be imperfect owing to the retention of air in the mold when the metal was poured in. In this case the imperfect part is carefully remodeled in wax on the defective casting, a clay mold is made over it in the usual way, and the wax is melted out. A certain quantity of metal is then poured in and allowed to run out until the edges of the defective part have been partially melted, when the outlet is stopped and the mold allowed to fill. When it has solidified the clay mold is broken away and the excess of metal filed off.

Handles and ornamental appendages, which have been separately cast, are frequently attached to objects in this manner. Separate parts of complicated groups and of colossal figures are similarly united, and often this is so skillfully done that it is impossible to say whether the whole is a true single casting or is composed of several pieces which have been separately cast.

Rude as the appliances and methods of the Japanese art founder

which I have just described may seem to us, he has produced with them castings in bronze on all scales which, with all the modern equipments of our foundries, it would be difficult for us to excel. The simplicity, adaptability, and portable character of his appliances have been of special advantage to him in his remarkable achievements in colossal castings. Thus, when a huge image of a Buddhist divinity or a bell of unusual weight was required for a temple in any locality, the whole of the operations were conducted on the spot. Temporary sheds for the modeling were erected in the temple grounds. The furnace and blowers were transported thither in segments; sometimes the latter were even made by the local carpenters. If the casting had to be made in one piece the necessary number of cupola furnaces, each with its blower, were erected around the mold. The cost of the blast was nil, as the services of any number of eager volunteers from the crowds which congregated at the temple festival on the day of casting were readily obtained for the meritorious work of treading the blowing machines. In this way the great bells and colossal images were cast. It may be interesting to note here that the methods of heating the mold and of repairing defective castings were in use in Europe during the tenth and eleventh centuries, and doubtless at a very much earlier date. They are described by Theophilus in his valuable treatise, De Diversis Artibus, written in the early half of the eleventh century, and his description is practically identical with that I have just given you of them as they are practiced in Japan.

4.—THE ALLOYS USED.

The success which the Japanese artist has attained in the execution of his famous masterpieces in bronze is not, however, solely due to his methods of modeling and casting, but is largely dependent on the physical character of the alloys he has used. His alloy, par excellence, is called "karakane"—which signifies "Chinese metal"—this name having been given to it because it is believed not to have originated in Japan, but to have been introduced from China. The exact date of its introduction is unknown, but there is little doubt that it was not later than the seventh century, when the bronze coins in circulation in the country were chiefly Chinese, and it was probably in this form that the Japanese first became acquainted with it. The name "karakane" does not, however, designate any definite alloy. It has a generic rather than a specific signification, and is applied to a very varied group of mixtures of metals of the copper-tin-lead series, in which the proportion of copper may range from 71 to 80 per cent, of tin from 2 to 8 per cent, and of lead from 5 to 15 per cent.

The Table II which follows contains all the analyses of the alloys bearing this name which have been published by various analysts, as well as some which I have made myself of typical specimens. It also includes several other allied alloys which are not in such general use as "karakane," but are valuable for special purposes:

TABLE II.—*Analyses of Japanese bronzes ("karakane") and allied alloys.*

Description.	Analyst.	Copper.	Tin.	Lead.	Arsenic.	Antimony.	Zinc.	Iron.	Silver.	Sulphur.	Gold.	Nickel.	Total.
1. Temple bronze	Maumené	88.70	2.58	3.54	.....	0.10	3.71	1.07	.....	.....	.....	.....	99.70
2. Incense burner, eighteenth century	Gowland	86.85	1.76	9.13	1.15	.40	Nil.	.33	0.079	.....	Trace.	.....	99.699
3. Temple bronze	Maumené	86.38	1.94	5.68	.....	1.61	3.36	.67	.....	.....	.....	.....	99.64
4. Vase, eighteenth century	Geerts	85.3	8.9	4.7	Trace.	.....	.....	1.1	.....	.....	.....	.....	100
5. Cannon, eighteenth century	Gowland	84	a12.68	3.32	.....	.....	.....	.....	.....	.....	.....	.....	100
6. Vase, eighteenth century	Geerts	83.70	5.38	7.80	Trace.	.....	.185	.65	.....	.....	.....	.....	99.38
7. Coins, "bunkyu," 1863	Gowland	83.10	3.21	11.22	1.50	.49	Nil.	.27	.06	0.38	Trace.	.....	100.23
8. Old bronze ornamental vessels, probably vases.	Morin	83.09	3.23	11.50	.25	.....	.50	.22	.....	.....	.....	.....	98.79
9.		82.90	2.64	10.46	.25	.....	2.74	.64	.....	.....	Trace.	Trace.	99.63
10.		82.72	4.36	9.90	Trace.	.....	1.86	.55	.....	.....	.....	.....	99.39
11. Modern ornament, a tortoise	Roberts-Austen and Wingham.	81.62	4.61	10.21	.....	.....	.....	.....	.....	.....	.....	.....	99.08
12. Coins, "tempo," 1835 to 1870 A. D.	Gowland	81.31	8.26	9.74	.18	.03	.19	.06	.037	.08	.....	.....	99.887
13. Vase (?), old	Morin	81.30	3.27	11.05	Trace.	.....	3.27	.67	.....	.....	.....	.....	99.56
14. Temple bronze	Maumené	80.91	7.55	5.33	.....	.44	3.08	1.43	.....	.31	bTrace.	.....	99.05
15. Coins, "do-sen," 1636 to 1768 A. D	Gowland	77.30	4.32	15.33	1.14	.31	Nil.	1.01	.06	.52	Trace.	.....	99.99
16. Vase or ornament	Kalischer	76.60	4.38	11.88	.....	.....	6.53	.47	.....	.....	.....	.....	99.86
17. Temple bronze	Maumené	72.09	5.52	20.31	Trace.	.....	.67	1.73	.....	.....	.....	.....	100.32
18. Ornament	Geerts	71	5.50	20.35	.....	.....	1.34	1.84	.....	.....	.....	.....	99.93
19. Mirror, seventeenth or eighteenth century	Gowland	95.04	.58	3.19	.14	.....	.....	.04	1.13	.04	Trace.	.....	100.16
20. Mirror, modern	Atkinson	76.28	23.64	.13	.....	.....	.....	.....	.....	.....	.....	.....	100.05
21. Mirror, modern	Hochstetter Godfrey	75.05	16.95	7.63	.....	.....	.....	.....	.....	.....	.....	.....	99.63
22. Bronze for soldering copper	do	67.87	29.92	.89	.....	.....	.....	1.19	.....	.....	.....	.....	99.87
23. Solder for bronze	do	37.04	.....	1.01	.....	.....	61.63	.25	.....	.....	.....	.....	99.93
24. Brass coins, "shimon-sen," 1768 to 1860 A. D.	Gowland	75.62	.73	2.85	1.99	.14	16.54	1.76	.016	.09	Trace.	.....	99.736
25. Brass temple vase, eighteenth century	do	74.52	.79	5.50	.12	Trace.	19.14	.15	.....	Trace.	.....	.....	100.22
26. Yellow bronze, "sentoku"	Roberts-Austen and Wingham.	72.32	8.126	6.217	.....	.....	a13.102	.170	.....	.....	cTrace.	.065	100

a By diff. *b* Manganese. *c* Bismuth.

TABLE III.—*Analyses of ancient bronzes of various countries containing lead.*

Description.	Analyst.	Copper.	Tin.	Lead.	Zinc.	Iron.	Silver.	Arsenic.	Gold.	Sulphur.	
Figure of Osiris, Egypt [date ?]	Gladstone	87.1	6.3	4.4		Trace.					
Celtic armlet, prior to Roman occupation	Church	8.49	6.76	4.41	1.44						
Fragment of drapery, Greek, 450 B. C. (British Museum).	Roberts-Austen and Wingham.	84.49	9.47	5.31		Trace.					
Figure of Isis, Egypt, Ptolemaic time	Flight	82.19	2.02	15.79							
Greek vase, time of Alexander the Great, 356 to 324 B. C.	do	81.764	10.901	5.246		.153	Trace.			Trace.	Cobalt, 1.222; nickel, trace.
Coin, Claudius Gothicus, 268 A. D.	Phillips	81.60	7.41	8.11			1.86				
Roman statue of Victory, Brescia [date?]		80.8	9.4	7.7	1.9						
Figure of Apollo, from Orange (British Museum), first century A. D. [?].	Roberts-Austen and Wingham.	80.70	6.44	9.97	Trace.	Trace.	Trace.				
Coin, Julius and Augustus, 42 B. C.	Phillips	79.13	8	12.81		Trace.				Trace.	
Buckle from Bohemia, prehistoric		76.9	9.3	7.7		2.9					
Coin, Roman As Quadrans, *circa* 500 B. C.	Phillips	72.22	7.17	19.56		.40					Cobalt, 0.28; nickel, 0.20.
Statuette (fragment), Egypt [date?]	Bibra	71.46	3.60	21.54	3.07	.08					Antimony, 0.10; nickel, 0.13.

And as a comparison of the alloy "karakane" with similar alloys of other countries is of considerable metallurgical as well as historical interest, I have given in Table III some analyses of several ancient objects, which will enable this comparison to be made.

I would also call your attention to a very valuable series of analyses of oriental art metal work made under the direction of our chairman, Professor Roberts-Austen, who has won special distinction for his researches on alloys, and published by the science and art department.

It will be seen from Table II that the presence of lead, as an important constituent, is one of the characteristic features of the composition of the Japanese bronze "karakane," although, as is shown in Table III, it is not peculiar to them. Several reasons have been advanced for the origin of the presence of this metal in copper-tin alloys; those, however, we need not discuss here. One thing is certain, that even in very early times the relative properties of copper-tin and copper-tin-lead alloys were known, as in almost all specimens which have been analyzed swords and weapons in which strength and hardness were essential consist of the former (copper-tin), and coins, decorative objects, and figures, in which these properties were not necessary, of the latter (copper-tin-lead).

The wide range in the proportions of the constituents of "karakane" is fully demonstrated by the analyses given above. This variability in composition is not solely the result of attempts on the part of the founder to produce special alloys, as might be conjectured, but is chiefly owing to the practice, universally adopted, of mixing considerable quantities of old metal "scrap" of unknown composition with the furnace charge, even when the copper, lead, and tin of the same charge have been carefully weighed in definite proportions, a practice not altogether unknown in this country. In the case of the temple bronzes, it is generally due to their having been cast from accumulations of ex voto offerings of the most heterogeneous character.

A few words on the purity of the metals used by the Japanese in preparing their alloys may not be out of place here. The copper, as will be seen from the following analyses, is almost without exception extremely free from the injurious metals—arsenic, antimony, and bismuth:

Japanese copper refined by native processes.

	Nobe-ji.	Akita.	Omodani.	Sumitomo (ma-buki-do).
Copper	99.30	99.55	99.80	99.24
Lead	.55	.23	.12	.49
Iron	.10	.15	Trace.	.05
Arsenic	Trace.	Trace.	Trace.	.04
Antimony	Trace.	Nil.	Nil.	Trace.
Silver	.025	.009	(*a*)	.022
Sulphur	Trace.	.03	Trace.	.01
Bismuth	Nil.	Nil.	Nil.	Nil.
Total	99.975	99.969	99.92	99.852

a Not determined.

Imperfectly refined copper, containing larger proportions of sulphur and iron than those given above but still comparatively free from arsenic, antimony, and bismuth, is sometimes used. When Japanese castings are unsound from vesicular cavities, the unsoundness is generally due to the sulphur in such copper. The sulphur becomes oxidized, during melting and pouring the alloy, to gaseous sulphurous anhydride, and the cavities are formed by bubbles of this gas being retained in the casting during solidification. In our own foundries this element is also too frequently the unsuspected cause of the same defects in castings.

The tin used generally contains lead, occasionally iron and copper, but rarely other impurities.

The lead is tolerably pure, excepting that it always contains a little silver.

Zinc, which is of frequent occurrence in Japanese bronzes (karakane), has never been added as metal, and its presence is due to the brass articles which often form part of the "scrap" of the furnace charges.

The presence of arsenic and antimony, both of which are often found in considerable amounts in these alloys, is not due to the use of impure metals, but to the addition of a pseudospeise called "shiro-mé"—a by-product of the desilverization of copper by lead [1]—the composition of which is given in the following analysis, which I have made of a characteristic specimen:

	Shiromé.		Shiromé.
Copper	72.70	Silver	1.33
Lead	8.53	Sulphur	.33
Arsenic	11.37	Zinc	Nil.
Antimony	4.27	Gold	Trace.
Tin	.93		
Iron	.13		99.50

The first official record we have of the use of this pseudospeise is contained in an edict of the Government in 1764, prescribing its addition to the copper-tin-lead bronze to be used in the mints for the casting of coins, but doubtless it had been similarly employed very much earlier than that date, and almost certainly in the casting of the colossal Buddha in Kioto in 1614 A. D. It was added to the alloy in order to increase its hardness without diminishing its fusibility, and to obtain in the castings a sharper impression of the mold than was possible with the copper-tin-lead alloy alone. During later years it has been used by some bronze founders because its addition to "karakane" has been found to facilitate the production of the gray patina, which is preferred for objects which have to be decorated with inlaid-line designs in silver.

It is almost needless to say that silver, although mentioned in temple records as having been added to the bronze used for the casting of some of their famous images and bells, has never been so added, as there is never more present than can be accounted for by its occurrence in the

[1] "A Japanese pseudospeise," by W. Gowland. Jour. Soc. Chemical Industry, Vol. XIII, page 463.

copper, lead, or shiromé used. Mercury and gold, which are also erroneously recorded as constituents of some noted bronzes, do not exist in the alloy, and can only have been used for gilding their surfaces. Patches of gold have, however, been employed for the decoration of some ancient bronzes.

The chief characters on which the value of the Japanese copper-tin-lead alloys as art bronzes depend may be briefly stated as follows:

(1) Low melting point. This is of especial importance to the Japanese founder owing to the fusible nature of the clays and sands of which his crucibles and molds are made.

(2) Great fluidity when melted compared with the sluggishness of copper-tin bronzes.

(3) Capability of receiving sharp impressions of the mold.

(4) Their contraction on solidification is not excessive.

(5) Their peculiar smooth surface.

(6) The readiness with which they acquire rich patinas of many tints when suitably treated.

The advantages resulting from the above properties will be obvious to all artists in bronze. They are chiefly the result of the use of lead as one of the chief constituents of the alloys. The low melting point of these bronzes, their fluidity when melted, and the facility with which they acquire certain patinas are indeed entirely due to the use of this metal. The fine velvety surface and sharpness of the castings depend in a great measure on the structure of the mold and its comparative high temperature when the bronze is poured into it, although partly also on the influence of the lead. These alloys are, however, not without some disadvantageous physical properties, and these are also due to the lead which they contain. They are often low in tenacity, and offer but little resistance to bending and torsion when compared with simple copper-tin bronzes, even when they contain sufficient tin to enable them to hold more lead in solution than they would otherwise do. Their use is hence almost limited to the production of objects of art. And even for those art castings, such as, for example, large equestrian or other statues, where a considerable strain has to be borne by certain parts, their use is unadvisable. But in most art castings of moderate size—and even in many of colossal proportions, where the position of the center of gravity of the mass does not cause excessive tension in any part—it is not necessary that the metal of which they are cast should possess great tenacity. For all such these alloys are eminently adapted, and especially so, as by no others can the work of the artist's hand, with all its delicate and masterly touches, be so readily and perfectly reproduced.

I do not think they could be advantageously used for statues or monuments exposed to the weather in the impure atmosphere of our great towns, but for castings protected from these combined adverse influences I think the Japanese bronze, "karakene," is worthy of a trial. As we have seen, the Japanese founders have no fixed or stand-

ard composition for their alloy. I may hence be permitted to suggest the proportions in which, in my opinion, the metals should be mixed to produce a bronze which, for castings of moderate size and thickness, would secure many of the advantages possessed by it. They are as follows:

Metal.	A.	B.
Copper	88	88
Tin	7	6
Lead	5	5
Zinc	0	1
Total	100	100

The zinc to be omitted from castings with very delicate lines of ornament.

Specimens of each of these alloys are on the table for your inspection, also a specimen of ordinary gun metal, C, containing 2 per cent of zinc, for comparison with them. They do not differ much in tensile strength, that of A being 13.25 tons, of B 12.19 tons, and of C 14.29 tons per square inch. These alloys have been kindly prepared for me, and their tensile strengths determined by the Broughton Copper Company (Manchester), who are specially skilled in the manufacture of copper alloys.

The other alloys, which are not contained in the "karakane" group, do not require a lengthy consideration, as they are much less frequently made use of by artists. Thus the simple copper-tin alloys which were employed in prehistoric times are not found in use after the introduction of "karakane" from China until comparatively recently, and then only occasionally for mirrors.

Neither have the copper-zinc alloys, "Shinchu," or brass (Table II, Nos. 24 and 25), been much in favor among artists. They were unknown in Japan before the establishment of Buddhism, and were probably introduced contemporaneously with that religion from China (sixth century A. C.). Their use in art has been almost exclusively restricted to the production of the ceremonial vessels and utensils of temples and shrines, and especially for the "Go-gusoku," or five ornaments of the Buddhist altar.

Even when a yellow metal is needed for the purposes of decorative ornament brass is seldom used, copper coated with gold being preferred, the rich color and quality of the gold surface being more pleasing to the Japanese than the harsher tones of the copper-zinc alloy. Hence there is scarcely a single example in the country of any great work of art executed in brass.

Occasionally the yellow bronze, "sentoku" (Table II, No. 26), consisting of copper, tin, and zinc—an alloy occupying an intermediate position between "karakane" and brass—is used instead of the latter alloy. It is, however, probably not older than the fifteenth century. An old Chinese legend records that it was accidentally discovered after

the destruction of a temple by fire, when the bronze, brass, and gold vessels of the altar were melted together into a mass. The beautiful color of the metal attracted the attention of some art founders, who, after numerous unsuccessful attempts, at last succeeded in producing an alloy resembling it. Gold is said to be an essential ingredient in its composition, but I have not found any in the specimens I have examined. It is not in very common use. Vases and other objects cast of it—generally with but little ornament in relief—are occasionally met with, but the finest specimens are found among the guards and other ornamental furniture of the sword, and all are chiefly notable as examples of chasing rather than of founding, or for the beautiful color and texture of their surfaces.

The method of preparing or melting bronze is, as is well known to all founders, secondary only to its correct composition, and as it has such an important influence on the character of the castings, one or two points relating to it, derived from my own experience, may be briefly considered here. Cupola furnaces should never be used for any bronze castings. If coke is employed as fuel in them the metal will be contaminated with sulphurous anhydride (SO_2), and the casting will be vesicular. This may be avoided by using charcoal, but with either fuel the bronze will be of uncertain composition. The Japanese method is in this respect decidedly faulty.

For castings of small or moderate size the bronze should be melted in plumbago crucibles. For large castings requiring the contents of several crucibles a vessel of sufficient capacity should be provided into which the metal from all the crucibles should be poured, and then from it into the mold.

The bronze should not be stirred with iron rods, or it will be contaminated with iron, but with plumbago stirrers. This method should be adopted whenever practicable, even for castings of considerable size, and the fuel used should be charcoal or specially selected coke as free as possible from sulphur.

For colossal castings reverberatory furnaces must be used, and when worked with care they give satisfactory results. A point apt to be neglected in these furnaces is the proper mixing of the alloy—not a difficult matter, but requiring more supervision than is often given to it—and everyone who has had to make many castings with them will have occasionally found crusts of a white alloy attached to the sides of the hearth, indicating that some of the castings did not contain their full amount of tin.

A second point of importance which is often overlooked is the liability of the metal to absorb sulphurous anhydride (SO_2) from the products of combustion of the fuel. This may be prevented by keeping a sufficient supply of charcoal on the melting hearth while the copper is being melted, and afterwards a thick layer on its surface, and at the same time guarding against a large accumulation of ashes and clinker in the fireplace.

Another important point is the prevention of the formation of suboxide of copper (Cu_2O) during the melting of the copper before the addition of the tin and other metals, as, whenever this is formed, it dissolves in the copper, and when the tin and zinc are added it reacts with them, forming difficultly fusible oxides, which diminish very greatly the fluidity of the bronze.[1]

It is prevented, to a certain extent, by keeping an excess of charcoal on the melting hearth, but too often this is an insufficient precaution, and I would strongly recommend in all cases that the copper should be treated by the process known as "poling" before the addition of the tin and other metals. This is performed by placing the end of a pole of green wood below the surface of the copper; much gas and vapor are given off, the metal is violently agitated, so that every particle is brought into contact with the charcoal on its surface, and all traces of suboxide are removed.

Phosphorus, aluminium, and manganese have each the effect of removing this oxide. They should not, however, be added in excess, but only in sufficient quantities to insure this result. The kind of copper used is also of great importance.

The purest metal obtainable should alone be employed in the preparation of bronze for valuable "cera perduta" castings, electro-deposited copper if possible, or at least what is known as "best selected" copper, and this should have an electric conductivity of not less than 98 per cent on Matthiessen's scale.

5.—STAINS AND PATINAS.

The rich patinas which Japanese bronzes acquire by age or special treatment, and which enhance so much the beauty of the artists' work, are worthy of a brief consideration, although perhaps they do not strictly come within the scope of the title of this paper. In many bronzes the beautiful color is due merely to a "stain," i. e., a colored film of infinitesimal thinness. In others the surface of the metal is altered to a considerable depth, and in these only have we true patinas. Frequently both a "stain" and a patina are produced by similar treatment, but the operations required for the latter are of a more prolonged character than for the former, and are accompanied by special manipulations, in addition to the application of what are termed pickling solutions. For the production of true patinas of the richest and darkest shades of brown by Japanese methods it is essential that lead should form one of the constituents of the bronze, and that zinc should either be absent altogether or be present only in small proportions. On the other hand, "stains" of any color can be given to metal of any composition and even to unalloyed copper.

The substances used in the operations are copper sulphate, basic

[1] This can be easily demonstrated by melting a little copper in a crucible, allowing it to oxidize, and then adding zinc, when the resulting alloy will be found to be so pasty that it can hardly be poured out of the crucible.

acetates of copper (verdigris), iron sulphate, sulphur in fine powder, alum, vinegar prepared from unripe plums, and a decoction of the roots or entire plant of *Calamagrostis hakonensis* (Nat. Ord. *Gramineæ*), potassium nitrate, and sodium chloride. The most important of these reagents are the first five in the above enumeration. Various mixtures of these are dissolved or suspended in plum vinegar and water to form what are called the pickling solutions. Sometimes they are applied in the form of pastes. Some are also used singly to obtain special effects, especially the decoction of *Calamagrostis*. The proportions in which they are mixed to form the pickling solutions are different in every art foundry, even for the same patina. Hence several recipes—said to be used for special patinas—which have been communicated to foreigners, and in which these proportions are given in very exact weights, are not strictly representative of actual practice. So far as my observations go, the ingredients are never carefully weighed in making a solution, and when it is made additional quantities are so often mixed with it at the discretion of the craftsman, that after the first day of its use it is impossible to say what its composition really is. Old solutions are always preferred to new, and in many cases are added to the new in large quantities, thus still further increasing the indefiniteness of their composition. In the bronze department of the imperial mint, which was superintended by an old art worker of great skill, there was only one pickling solution for the treatment of bronze. About equal parts of copper and iron sulphates and smaller quantities of alum and sulphur mixed with varying quantities of plum vinegar, water, and old solution were used in its preperation. Almost every variety of stains and patinas, excepting red and green, were obtained by its use by varying the mode in which it was applied and the treatment of the bronze between the applications.

The processes for producing a patina by the use of these solutions are, as might be expected from what I have just stated, neither simple nor easy, and the intermediate operations on which its production depends, more than on the exact composition of the solution, are so variously modified in different foundries that I can only give you an imperfect account of their chief features within the limits of this paper.

When the casting has been freed from any adherent portion of the mold its surface, where necessary, is very carefully smoothed by lightly rubbing it with a piece of soft, close-grained charcoal or with an impalpable powder of silicious shale prepared by levigation. After its surface has been thus prepared it is sometimes boiled in a decoction of finely ground beans (*Glycine hispida*), this treatment being supposed to facilitate the action of the pickling solution.

It is then immersed in the pickling solution, which is frequently heated almost or quite to the boiling point, but sometimes to a much lower temperature. In other cases it is allowed to remain in a cold solution for many hours. After the casting has been acted on until the

required effect of this stage of the process has been obtained it is taken out and washed with water, and also with a decoction of *Calamagrostis.* It is then carefully heated over a brazier containing burning charcoal, being turned round from time to time until every part has been brought to the proper temperature. During this operation it is frequently wetted with the above decoction or with a pickling solution, and the amount of time and patience bestowed on this manipulation is almost incredible. The casting is again submitted to the action of the pickle, again heated as above described, and these operations are repeated until the desired platina has been produced.

It is obvious that large bronzes can not be thus treated. The pickling solution can only be applied to them in washes, and their action is thus merely sufficient to produce a very thin film of altered metal, scarcely, if at all, more than a stain, and the true patina only results from the action of time. A green petina, in imitation of that of ancient bronzes which have been exposed to the action of the weather, is obtained by treating the casting with plum vinegar, to which common salt is occasionally added, and exposing it to the air, and sometimes this is supplemented by burial in the ground for varying lengths of time. This patina, although often very beautiful, is, I need hardly say, of an entirely different character from the mixture of carbonates, oxychlorides, and oxides of which the true old patina consists.

It will be seen from the foregoing that much practice, careful observation, and patient labor are required for the successful performance of these operations. The artist has no definite rules for his guidance in carrying them out, each seems to have his own methods of procedure, and these he varies according to his experience. His success does not depend on the use of solutions of definite composition, or on the exact proportions of the metals in his alloys, but rather on his ability to correctly modify the manipulation of the various stages of the process, so that the patina he aims at may be infallibly produced. These are the chief features of what may be termed the "wet" method of producing patina. The oldest bronzes, however, owe their patinas almost exclusively to the action of time, and those of intermediate age generally to "dry" methods, in which they were exposed to carefully regulated temperatures in furnaces heated by charcoal. These "dry" methods have now been almost entirely displaced by the "wet" methods just described, and were not in use in the foundries in Osaka to which I had access, so that I have not seen them in operation. Several specimens of bronzes, with magnificent patinas, are exhibited from the collections of my friends, Mr. Alfred Cock, Mr. Swan, and Mr. Tomkinson.

From the account I have just given you—I fear a very imperfect one—of the methods of casting bronze in Japan, it will be seen that they do not differ very greatly from ours. The chief differences lie in the use of the artist's model itself, in the preparation of the mold, in the heating of the mold, and the composition of the bronze. All these we can imitate; but the special excellence of Japanese bronze

castings—the faithful reproduction of the wax model, the comparative absence of retouching, the delicacy and vigor of the relief decoration—are not due solely to these, but are the results of a combination of conditions which are only of exceptional occurrence here. Chief among these is the nature of the Japanese people, the intense feeling and love of art with which they have been imbued for centuries past, and their just and enthusiastic appreciation of faithfulness in work. These qualities have made every workman an artist, hence the patient and marvelous skill which we see displayed in all his work, as well on common articles for everyday use as on those for the special purpose of decoration. The training which the artist receives in the operations of founding is also an important factor which can not be overlooked. Besides these there is an esprit de corps in the staff of a Japanese art foundry, which is not always found in Europe, the outcome of which is that an amount of painstaking care almost incredible is exercised by all, so that the work shall be as perfect as they can make it and worthy of the renown of their master.

One word only in conclusion. I think it will be admitted by all that a sculptor should himself possess a practical knowledge of the technical processes by which his work is to be reproduced in bronze. Now in this country this knowledge can only be acquired with the greatest difficulty by our artists, as it does not form a part of any course of their art training. I would hence repeat and indorse, with the emphasis it deserves, the suggestion made by Mr. Simonds in a valuable paper on "Artistic bronze casting," read before this society nine years ago, "that studios should be established in connection with our national art schools, where the student of sculpture could be practically taught the various processes incidental to his profession of molding and bronze casting," and, I would add, the coloring of metals. It would seem to be a matter in the encouragement and development of which our society might be able to afford valuable aid. There should be no insuperable difficulties in carrying it out, and I am sure you will agree with me that if it were carried out it could not fail to be of inestimable value to our artists, and to promote in no small degree the advancement of the art of bronze founding in our country.

The magnificent bronzes which I have the privilege of exhibiting to you to-night are chiefly from the collections of my friends, Prof. W. Anderson, Messrs. W. Cleverly Alexander, Alfred Cock, E. Dillon, F. Dillon, W. E. Hennell, Sir Trevor Lawrence, Messrs. R. Mills, Alfred Parsons, Charles H. Read, F. A. Satow, W. Harding Smith, R. Phene Spiers, J. M. Swan, H. V. Tebbs, and M. Tomkinson, to all of whom I desire here to express my sincere thanks for having so kindly lent them for the illustration of my paper, and especially so as I feel that any interest it may have had is largely due to them. I also owe many thanks to M. Cernuschi for his kindness in permitting me to have photographs taken of the fine specimens in his unique collection, which I have shown you on the screen.

THE AGE OF BRONZE IN EGYPT.*

BY OSCAR MONTÉLIUS.

It is generally admitted that bronze was known and made use of in Egypt from the earliest times of the ancient empire, about 6,000 years ago:† but authors do not agree so well in respect to iron. The majority affirm that this metal was also known in the valley of the Nile at an epoch not less remote. Very strong reasons however appear to me to demonstrate that it was in the second millenium before the Christian era, that the use of iron possessed in Egypt an importance that authorizes us to speak of an age of iron in that country. The greater part of the time, then, that embraces Egyptian civilization should be considered as an age of bronze.

Assuredly to the majority of persons this conclusion will appear unexpected, if not absurd. Egyptian civilization, in fact, during the period mentioned was eminent to a degree that can scarcely be believed possible without an acquaintance with iron. But we must not forget that the Aztecs in Mexico, with their civilization largely developed, were still living in a pure age of bronze on the first arrival of Europeans. The most important and almost note-worthy reason that has been cited to establish the age of iron in Egypt several thousand years before the Christian era is that at this remote epoch massive edifices were already erected there in wrought stone, and that this stone is so hard that it can be cut only with implements of iron, or rather of steel. The celebrated German Egyptologist, Mr. Lepsius, affirms: "Great masses of carved granite, certain specimens of which are met with from the fourth dynasty of Manéthon, do not permit us to question that iron was known at that era."‡ On the other hand it has been established by

* Translated from *L'Anthropologie*, January, 1890, vol. I, p. 25.

† Perrott and Chipiez: *Histoire de l'Art l'antiquité*, vol. I, Égypte, p. 829. Arcelin: *Influence Egyptienne pendant l'âge du bronze*, in the *Materiaux pour l'histoire de l'homme*, 1869, p. 377. In making deep drills in Egypt "a copper knife" was discovered at a depth of 24 feet (Mook, *Ægyptens vormetallische zeit*, p. 5). The British Museum possessed a few axes of bronze with descriptions from the time of the sixth dynasty, or about the middle of the third millenium before the Christian era *A Guide to the Egyptian Rooms* (in the British museum), p. 48.

‡ Lepsius, *Les Metaux dans les Inscriptions Egyptiennes*, translated from the German by W. Berend, Paris, 1887, p. 57.

special experiments that metal instruments are not required in order to carve a stone as hard as that of Egyptian edifices. Stone implements may be employed, although in this manner the work progresses very slowly, and requires a great deal of patience.*

But the Egyptians had had occasion to exercise patience, and every work can be accelerated by a multiplication of the forces put in operation. The Egyptian kings in their enterprises of construction were not accustomed to spare their laborers. Moreover it must be noted that Egyptian granite is so hard that our best steel instruments are soon ruined when one attempts to work with them. The fine figures which are found on Egyptian monuments, and especially the hieroglyphics, may rather be designated as engraved than carved. "It is in no wise improbable," says the English antiquarian, Mr. Wilkinson, who interested himself very much in the ancient Egyptains, "that they were familiar with the use of emory at the time when that substance, which is met with in the islands of Archipelago, was accessible to them; and if this be admitted we can explain the perfection and admirable delicacy of the hieroglyphics upon the monuments of granite and basalt. We then also comprehend why implements of bronze will be preferred to those of steel, which are harder and denser; for it is evident that emery powder will be incrusted upon the former and that its action on stone becomes greater in proportion to the quantity fixed on the sharp edge of the chisel; in our times, with the same view, we prefer soft iron tools to those of hard steel."

It is probable that sand—or emery, if they really possessed it—was used in the sawing of stone. We can thus more easily explain why verdigris has been sometimes observed in the quarries upon places where fragments of the rock have been detached by much sawing.†

The proof that bronze implements were employed by Egyptians for stone work is given by a Grecian author, Agatharchides, who lived about a hundred years before the birth of Jesus Christ. He relates that in his time bronze tools had been found in the gold mines in Egypt which had formerly been used by the mining laborers. He explains the utilization of bronze very correctly in stating that iron was entirely unknown at the time when the first operations in mining were begun.‡

Upon the monuments in the time of the ancient empire we sometimes see representations of men who are carving stone by the instrumentality of chisels, whose yellow or reddish-brown color shows that they were of bronze.§

---

* Soldi, *Les Arts méconnus*, Paris, 1881, p. 492. Perrot Chipiez, *ouv. cit.* I, p. 755.

† Wilkinson: "Manners and Customs of the Ancient Egyptians," 1st edition, vol. III, pp. 250, 251.

‡ Evans: "Ancient Stone Implements of Great Britain," p. 6.

§ Rosellini: *Monumenti dell' Egittoe della Nubia* (*Monumenti civili* PL. XLVIII.) One of these chisels is not bluish, as has been indicated (Rhind: *Thebes, its Tombs and their Tenants*, p. 222), but reddish brown.

At Thebes, in the midst of the waste from the carving of stones, Wilkinson found a large bronze chisel which evidently had been forgotten by the citizens thousands of years ago.* This chisel, 22 centimeters in length, presents at the upper extremity very clear marks of blows from a hammer, but the edge is so intact that it appears new. It would soon have been destroyed if workmen little accustomed to such implements had endeavored to cut with it a stone similar to that which it shaped in other days.

That the Egyptians, by means of their bronze implements, could have been able to produce what they have made, undoubtedly does not depend, as has been supposed, upon the fact that they were in possession of the secret talent, hid for so long a time, of tempering bronze, but only that they had the skill acquired by long practice of using their utensils, a skill that we no longer possess, being accustomed to other instruments. It can not be denied that the manner in which the stones of Egyptian monuments are cut, presents a great analogy with the fabrication of pre historic tools of stone and the sockets of their handles. Even lately it was supposed that these tools and their sockets could not have been fabricated without the aid of steel instruments. This view was sustained until experiments had placed beyond all dispute the fact that by using stone, bone, or wood solely, such tools could be made and perforated, provided that the necessary skill and time were bestowed on this work.

Imposing edifices of hard stone, richly adorned with reliefs, may be constructed without iron. Proof of this is furnished by Mexico and Central America, which are rich in monuments of this kind anterior to Columbus and to the introduction of iron into those countries by Europeans. One cannot therefore rely upon the fact that the construction and embellishment of the stately edifices of the ancient empire are impossible without steel, to maintain that the age of iron commenced in Egypt at that distant period.

We must then fix the epoch of the introduction of the age of iron into Egypt by the same method which has so well succeeded in other countries. This problem attracted too late the attention of the Egyptologists. The greater portion of the discoveries that are pertinent to this question were not therefore investigated as they should have been. It will be seen presently however that the documents are numerous and clear, and that the paintings especially instruct us with very great exactitude.

It is necessary to examine the facts by grouping them under four heads:

(1) What are the objects in iron discovered in Egypt which date from the most remote era, and of what character are they?

*Wilkinson: "Manners and Customs of the Ancient Egyptians, vol. III," pp. 249, 252, and 253.

(2) What are the most ancient inscriptions in which iron is mentioned? Can we be fully enlightened through them in respect to the signification of the hieroglyphics which are supposed to designate iron?

(3) What are the most antique monuments representing arms and instruments of iron?

(4) Up to what epoch did they continue in Egypt to employ arms and instruments of bronze? Can we perceive upon these objects marks left as a consequence of long usage, whether in the reparation of the sharp edges, or otherwise, proving that they were used, and that they were not fabricated solely for the tomb?

To the first interrogatory it is easy to respond: Fragments of iron instruments have been found in a few pyramids; and if they date from the time of these mausoleums they fully establish the great antiquity of iron in Egypt. The best known of these fragments is the one discovered by an Englishman, Mr. Hill, in 1837, in the great pyramid at Gizeh, built about 3,000 years before Christ. It is supposed that it was a fragment of an instrument with which the surface of hewn stone was polished, but it is also believed that it is not of steel, but of iron. It may have been discovered near the orifice of one of the narrow atmospheric canals which traverse the body of the pyramid as far as the mortuary cavern, and in articulation of the stones, but not until after the two layers of exterior blocks forming the cap of the pyramid has been removed. No fissure was observed or aperture of any description, through which this iron after the construction of the pyramid might have been introduced at the point where it was found. For this reason several persons, having explored this locality immediately after the discovery, have publicly attested their conviction that the fragment of iron had been left between the stones during the construction of the pyramid, and that it could not have been inserted there after this period.*

Similar discoveries have been made more recently. Thus M. Maspero, in 1882, collected several parts of iron hoes in the black pyramid at Aboukir, probably built during the sixth dynasty; that is to say, in the third millenium before the Christian era. He discovered, moreover, a few fragments of iron instruments in the mortar between two stones, in a pyramid in the vicinity of Esneh.† This pyramid is not anterior to the seventeenth dynasty, and its construction consequently immediately preceded the inauguration of the New Empire. Mr. Maspero, as I believe, has given no information more precise in regard to the situation and the bearing of these fragments of iron.

Reasons that we are about to assign authorize us to doubt the conclusions which have been drawn from these discoveries. The presence of these iron fragments is certain; but are we equally assured that they date from the erection of the monuments that contained them? The

* Vyse, "Pyramids of Giseh," I, pp. 275, 276. Transactions of the second session of the International Congress of Orientalists, held in London, 1874, pp. 396–399.

† Maspero, *Guide du Visiteur au Musée de Boulag* (Paris, 1884), p. 29.

points at which they have been met with—have they not been accessible to man from time to time during the thousands of years that have followed the construction?*

Can it be affirmed that the layers of stone under which they were lying were intact, and that the blocks had never been displaced and afterwards restored to their place? In our days these blocks have been removed without any harm being done to the solidity of the edifice. The circumstances of the bearings do not extinguish all possibility of their introduction at an epoch more or less late, and it does not seem that we are justified in drawing from these discoveries the conclusion that iron was already known and employed by the Egyptians 3,000 years B. C.† One has so much the less the right to an opposite conclusion, as we are about to see, from all that is known elsewhere concerning the epoch when iron was used, not only in Egypt, but even in other countries.

Lepsius, who supposes that iron was in use in Egypt from the fourth century,‡ is obliged to avow that in Egyptian tombs, until now, few objects in iron have been found, and that these objects are some of an uncertain era, others recent. This declaration of one of the most eminent scholars in Egyptian antiquity was made, it is true, 12 years ago, but, more recently, in the special circle of Egyptologists doubts have been manifested concerning the antiquity of iron in Egypt.§

Incontestable proofs of the existence of iron before the epoch of the new empire, that is to say, before the middle of the second millenium, B. C., have not been produced. Having maintained as evident that the Egyptians were in possession of iron at an epoch far more remote, they have meanwhile tried to explain the absence of this metal in the most ancient Necropolises and Mausoleums by invoking a religious prejudice.

Iron was regarded as the bone of Typhon, the enemy of Osiris, and for this reason considered impure; one could not make use of it even for the most ordinary requirements of life without polluting his soul in a way that would cause him harm both on earth and in the other world. Meanwhile, Mr. Maspero, one of the most eminent Egyptologists, has demonstrated that this explanation is not satisfactory, for

---

* Vyse says ("Pyramids of Gizeh," I, p. 4) that the mouth of the atmospheric canal in question is found partly enlarged before he began his labors there.

† The scruples I have expressed in respect to the discovery of iron in the great pyramid are not now presented for the first time; compare the work of Rhind, published in 1862, Thebes, its Tombs and their Tenants, p. 227.

‡ Lepsius, *Les Metaux*, p. 54.

§ In the official guide, printed in 1879, for the use of the visitors to the British Museum (*A Guide to the Egyptian Rooms*, p. 40) we read: "It is doubtful if the use of iron was known at a very remote period." In the same way people expressed themselves later, in 1884. See Journal of the Anthropological Institute of Great Britain and Ireland, session of March 25, 1884. Compare, also, Perrot and Chipiez, *Histoire de l'Art*, etc., vol. I (printed 1882), pp. 753, 754, and 830.

he says (p. 295), "The religious impurity of an object has never sufficed to prevent the use of such object. To cite but a single example, pork also was dedicated to Typhon and considered impure; they were bred however in droves, and the number of these animals was considerable enough, at least in certain cantons, to allow the good Herodotus to relate that they were let loose in the fields after the harvests in order to press down the earth and bury the grain. Besides, in Egypt each individual object was not exclusively pure or impure, but sometimes one, sometimes another, according to circumstances. It is thus that the boar and the sow, despite their Typhonian character, were the animals of Isis, and consequently share the Osirien purity. Iron, which certain traditions call the bone of Typhon, is commonly called "bonipit," the substance of heaven; it is hence pure in certain aspects, and impure in certain others."

Religious scruples had not placed any obstacle to the employment of iron in Egypt at the epoch when this useful metal was really known, for divers iron instruments have been found in contemporaneous tombs. Many of these objects have been deposited in the museum of the Louvre; they are all probably posterior to the fifteenth century B. C. and very near to that date. The most ancient—if we do not consider the fragments already mentioned which come from the pyramids—that are known in Egypt, and the age of which can be established, is a curved blade resembling a reaping hook, which Belzoni one day put under one of the Sphinxes at Karnak, but the age of this blade does not go beyond the seventh century B. C.* Maspero, who supposes the use of iron in Egypt to be very ancient, has endeavored in two instances to find an explanation of the rarity of this metal. He thinks, in the first place, that iron utensils which could not be employed have been remelted. But this does not explain to us the reason why in Egyptian museums objects in iron are more rare than objects in bronze. The recasting of bronzes out of use was at least practiced as much.

In the second place, Mr. Maspero, and with him many others, have desired to explain the absence of iron by arguing its destruction by rust. But it is necessary to recall that Egyptian tombs are so dry that here, less than anywhere else, could iron have been corroded by oxidation. Besides, rust has not the consuming activity which is sometimes believed. A great deal of time is required to accomplish its work of destruction; and in point of fact this rust could not entirely disappear.

* Day: *Prehistoric Use of Iron and Steel*, p. 14. Compare *Journal of the Anthropological Institute*, , March 25, 1883. The authenticity of this discovery is questioned by Rhind (*Thebes*, p. 228). An iron chisel was found under an obelisk at Karnak, which should date from the eighteenth dynasty (Arcelin, in the *Materiaux*, 1869, p. 377), but the determination of the age of the chisel is perhaps questionable. If it were even correct, the discovery nevertheless is posterior to the beginning of the New Empire.

In the tombs the rusted object, or the trace of the rust upon neighboring objects, would have been discovered.*

Now never in my knowledge has a vestige of iron been found more or less rusted, never even has the stain of rust been found in the tombs prior to the fifteenth century B. C.

This is all the more important as among the discoveries of the first millenium B. C. both in Egypt and elsewhere, numerous iron objects, among which are several well preserved, have been met with (Rhind, *Thebes*, p. 218). Now, if an object made of iron can be preserved almost intact during two or three thousand years, there is no reason why this object should have disappeared without leaving any trace if it had remained a little longer in the earth and under identical conditions.

Inasmuch as to-day almost all the hieroglyphic inscriptions can be read without difficulty, it might be supposed that it was easy to respond to the second inquiry above made and specify the group of characters that constitute the name of iron. Now, erudite men differ in this particular; with one it is such a term, with a second another.

It does not appertain to me, who am not an Egyptologist, to examine if the various and contradictory opinions do not proceed from the fact that some have imagined they discovered the word "iron" in inscriptions of an epoch when this metal was as yet unknown.

I do not know, further, if the group of hieroglyphics which is reputed to signify the term iron on a recent occasion referred to has the same signification in the inscriptions of the New Empire. It does not suffice that the word exists; it is necessary to prove also that this term at a remote period did not signify anything else; and for example, that there was instead of the meaning iron the meaning bronze or some other metal in general.

A striking example of such a change of signification is the following: In India in the early era of the Vedas *ayas*, designated bronze, and then, after the introduction of iron it was applied to the new metal. The Latin has preserved the primitive sense of the word *æs*. The problem is very essentially cleared up if recourse be had to another catagory of instruction: this is our third standpoint.

Among the mural paintings, so numerous and so often admirably preserved, there are a great many arms and modelled instruments, the greater part red or yellow, the rest blue. Surely one will not deny that the red and the yellow represents copper and bronze and the blue iron or steel.

In a tomb comparatively modern, that of Rameses III, some arms are red, others blue. Rhind (*Thebes*, p. 221) has erroneously drawn from

---

*Lepsius: *Les métaux*, pp. 52 and following. He says (p. 63) that the iron has not yet been found represented under his name. Perrot and Chipiez: *Histoire de l'art*, vol. I, p. 753; Chabas: *Sur le nom de fer chez les anciens Égyptiens* in the *Comptes rendus* de l'Académie des Inscriptions (January 23, 1874). Brugsch: *Hieroglyphisch-Demotisches Wörterbuch*, vol. V, p. 413, and following.

this the conclusion that colors are without signification. This fact demonstrates only that at that epoch some arms of bronze and others of iron were employed, although the latter metal had then been long known.

When we examine attentively the paintings of ancient times we observe that arms and tools are painted there red or yellow, never blue. Lepsius, who believes in the antiquity of iron in Egypt, is nevertheless very much surprised at the fact (p. 57) that red or light brown is employed in the re-production of axes, arrow barbs, pruning hooks, saws, chisels razors, and butcher knives.

It is in the paintings of the new empire alone that metallic objects are painted blue. This can be naturally explained. Bronze, until towards the fifteenth century B. C., was employed only for the fabrication of arms and instruments; iron was not as yet in use. Let us examine, finally, the last aspect of the question. The absence of objects made of iron in the mortuary furniture of the ancient era could have no signification or importance if those of bronze were equally wanting. But it is not thus. Bronzes are met with abundantly in the tombs.

We can now, thanks to the latter, approach the fourth of our queries. Among the most remarkable discoveries of bronzes anterior to the new empire, or contemporaneous with the early centuries of that era, we may cite that of Drah-aboul-Neggah, to the north of Thebes. In 1860, some Arabs exhumed from the sand a coffin, that of Queen A'hhotep. This queen had been married to Kamos, a king of the seventeenth dynasty, and perhaps the mother of King Ahinos I, or of his consort Nofirtari. King Ahinos was the first of the eighteenth dynasty. A'hhotep, consequently was living more than 1,500 years B. C. Her coffin contained a large number of precious objects and arms, with which the museum of Boula is enriched and which we are about to describe.* There was gold, silver, bronze, but no trace of iron.

Arms and bronze instruments were in use at a later period and concurrently with those of iron. This is proven by numerous bronzes in the Boulaq Museum and the European museums which bear the name of Thoutmos III. This king of the eighteenth dynasty lived during the first half of the seventeenth century B. C. If one has carefully read the group of hieroglyphics which it is assumed constitutes the term iron, they were acquainted with that metal at that epoch. There are also bronzes which bear the name of Queen Hatschopsitu, the sister and coregent of Thoutmos III. The inscriptions that bear these names are engraved or written with ink on the bronze itself or on the wooden handles of the tools (Figs. 29 and 39). It is proper to note that on sev-

* The discovery is described by Mariette in *Notice des principaux monuments du musée d'antiquités égyptiennes à Boulaq.* (Second edition, Alexandria, 1868, pp. 257–267), and by Maspero in his *Guide du visiteur au Musée de Boulaq*, Paris, 1884, pp. 77–83 and 320. Compare Perrot and Chipiez, *Histoire de l'Art* vol. I, p. 297, and Erman, *Ægyptien*, p. 612. The discovery is represented in the *Revue de l'Architecture*, 1860.

eral of these objects the same inscription is seen, with insignificant changes "The gracious God Ra-men-Kheper (prænomen of Thoutmos III), the beloved of Ammon, when the cord was stretched at Amen-saraku." It is supposed that it relates to the foundation of a "pylon" which Thoutmos caused to be built at Karnak.*

The fact that upon so many objects we meet with the name of this king would indicate that this name is of frequent occurrence in Egyptian inscriptions. This however may be the effect of accident which on a single day exposed an exceptional number of these objects; thus in a tomb at Thebes were discovered several baskets filled with instruments of this character.†

It has been supposed that the arms and tools exhumed from the tombs had been specially fabricated of bronze to be employed at ceremonies either solemn—for example, the foundation of a "pylone," as we have just seen—or funereal.‡

The bronze from the considerations of religious orders would have continued to be utilized long after industry might have manufactured arms of iron and tools for ordinary use. But this supposition is contradicted. Since a great number of these bronzes bear evident marks of long use, they were not fabricated, consequently in order simply to be deposited in the tombs.§ At the close of the second millenium B. C. arms of bronze were not yet entirely replaced by iron arms. The mural paintings in the tomb of King Ramses III at Thebes, which date from the twelfth century, prove this; here a great quantity of arms may be seen, the major part blue, the remainder red. Lance-barbs and swords with two edges are sometimes red, at others blue.‖

The arms represented in this tomb were those which were used in war at the time of Ramses III. It cannot therefore be assumed that the red arms were of bronze, because they were especially fabricated for the tomb. They are painted red because bronze arms were then in

* *Sitzungsberichte der königl. Preussichen Academie der Wissenchaften zu Berlin*, 1888, vol. XXXIV, p. 770.

† Bronzes with the name of Thoutmos III, or that of Hatschopsitu are deposited in the Boulaq museum (an ax, a chisel, two blades of a saw, etc.); Maspero, *Guide*, etc., pp. 297–299); the British Museum (three axes and a couple of saws); *a Guide to the Egyptian rooms*, p. 42; the museum at Leyden (two axes, one saw, etc., Leemans *Mon. Egypt du Musée de Leide*, pl. 80, fig. 3 and pl. 90, figs. 157, 159, Chabas, *Etudes sur l'antiquité historique*, pp. 76–79; the collection of the Duke of Northumberland at Alnwick Castle (ax, two chisels, a drill, a saw-blade) Birch, *Catalogue of the Collection of Egyptian Antiquities at Alnwick Castle*, p. 200, pl. B.

‡ Birch, *Catalogue*, p. 200. The same inscriptions are duplicated also upon the bronzes that belong to the collection at Alnwick Castle.

§ The celebrated Swedish Egyptologist, M. Piehl, whose attention I called to the importance of this question before one of his visits to Egypt, had the kindness to write me that a considerable number of arms and bronze instruments, preserved in the Boulaq museum, had evidently been long in use, as is demonstrated by the fact that they were used and re-sharpened again and again.

‖ Champollion *Monuments de l'Egypt*, pl. 263–264. Rosellini, *Monumenti Civili*, pl. 121; Lepsius *Les Meteux*, p. 117, and pl. 11, fig. 2–7.

general use. It is very important to establish that bronze arms were common in the second century, and even that they were in a majority at this moment, which is already an iron age. Such would not have been the case if (as many authors suppose) iron had been known and employed in this country for thousands of years. This is an observation of which the value will be apprehended. If iron had been in the service of industry from the early dynasties it would not be found so rare still towards the second century. Everywhere else it is agreed that when iron appears, bronze is not long in yielding place to it for the fabrication of swords, axes, knives, etc. The experience acquired everywhere on this subject does not permit us to doubt that it would not have been otherwise on Egyptian soil, or that bronze, in despite of the presence of iron, would have remained so long alone or almost exclusively utilized.

It seems to result from the discoveries of Schliemann at Mycene and Tiryns, and which belong to the close of the second millenium B. C., that iron was not known in Egypt as early as has been asserted. Amongst so many objects of every variety which have been collected in the tombs of Mycene, there is no trace of iron, whilst hundreds of swords and other arms are of bronze. In the royal palace at Tiryns there is no iron or trace of iron.*

Now, the antiquities of these two cities testify to a powerful influence from Egypt, undoubtedly exercised through the agency of the Phœnicians, and it would then be scarcely possible that iron should have been completely unknown in Greece, if for two thousand years it had already been known in Egypt.

From what we have just said it follows with great probability that the Egyptians, during the whole time of the ancient empire, and probably until almost fifteen hundred years B. C., were not acquainted with the use of iron, and employed only bronze for their arms and instruments; that the age of bronze consequently continued in Egypt until the epoch mentioned, and that iron, as yet, towards the close of the second millenium B. C., *had not altogether replaced bronze for the construction of arms and edged instruments.*

The most remarkable discovery in Egypt of bronze arms is, as we have already said, that which was made in the coffin of Queen A'hhotep. Among the great quantity of precious things which this tomb contained we first mentioned were the following objects, which constituted a part of the toilet of that princess: Several gold bracelets, ornamented with precious stones and plates of glass, rings for the legs of gold, a golden chain, a diadem, a large collar and a decoration for the breast of gold

* The lyrics of Homer speak sometimes of iron, but these songs were probably not composed until long after the epoch of the Trojan war, and certainly they were not written in the condition in which we now have them. They cannot then be in testimony of the knowledge of iron in Greece at the time of Agamemnon or of Ulysses.

and precious stones, the handle of a fan of wood laminated with gold, an ebony mirror of gold and gilded bronze, etc. But along with these were found in the tomb of the queen various arms and a small boat of massive gold mounted upon a wooden chariot with wheels of bronze and a similar boat of silver. In the golden boat twelve oarsmen are seen, also of gold, who are rowing under the orders of the helmsman and pilot in the prow. In the center of the boat a diminutive personage holds an ax and a baton of authority; a cartouche engraved behind the helmsman teaches us the death for which he was originally predestined. This boat is King Kamos. The vessel itself is a symbol of the craft on which the deceased must embark according to the creed of the Egyptians, and be borne to Abydos in order to enter the other world.

Upon a few other objects found in this tomb may be read the names of the kings, Kamos, Ahmos, and the prenomen of the latter, Nibpehtiri.

The arms found in the tomb are of great importance to our subject. They are three poniards with blades of bronze and gold; two axes, one of gilded bronze, the other of silver; nine small hatchets, three of gold and six of silver; and a baton of authority, made of black wood and gold.

The figures that we are about to refer to are grouped upon the plates apart from the text here subjoined. One of the poniards was originally sheathed in a scabbard of gold.* The handle is of wood, and ornamented with small triangles in cornelian, lapis-lazuli, feldspar and gold forming the reverse. For the pommel, four female heads in pricked gold; an inverted bull's head conceals the soldering of the blade to the handle. The body of the blade is of dark bronze, inlaid with massive gold and damascened. Upon the upper face above the prenomen Nibpehtiri a lion is pursuing a bull, in advance of which two locusts are quietly proceeding. The lower facet bears the name of Ahmos I and fifteen flowers in full bloom which issue one from another and disappear toward the point of the blade. Another poniard (Fig. 18) has a gold handle, the blade being of bronze. The third poniard (Fig. 11) is formed with a very heavy blade, and a disk of silver serving as a handle. Figure 12 exhibits the poniard from a side point of view.†

One of the large axes is represented in Fig. 26. The handle is of cedar wood, ornamented with a golden leaf. The name of the king, Ahmos, is here traced in incrustations of lapis-lazuli, cornelian, turquoise, and green feldspar. The blade is provided with a simple handle

* The figures which here represent the objects preserved in the museum at Boulaq are executed after photographs which, through the kind instrumentality of M. Piehl and M. Brugsch Bey, were executed for me. The description of the sumptuous arms in the tomb of A'hhotep are taken from the *Guide du Visiteur au Musée de Boulaq*, by Maspero, pp. 79–83. Compare Erman, *Ægypten*, p. 612.

† Fig. 12 is designed from Fig. 564 in the first volume of Perrot and Chipiez, *ouvr. cit.*, where it is exactly indicated as representing a pin.

of wood and maintained in its socket by a coil of gold thread. It is of black bronze and has been gilded.

One of its facets bears lotuses on a ground of gold; the other represents Ahmos threatening with his axe a barbarian, half overthrown, whom he is holding by the hair of his head. Above this scene is represented the god of war, Monton Thebain, under the form of a griffin with the head of an eagle.*

The other axe is of the same form, the handle being of horn garnished with gold, the blade being of silver. Among the bronze axes found in Egypt with which I am acquainted none is perforated in the same way as the axes used in our days. All are of the same form as the wedges of bronze so common during the age of bronze in Europe, and are fastened to the handles by thongs or other bands.

All the Egyptian axes that I have had an opportunity to see at the Louvre and in other collections have been flat wedges without any traces of elevation along the borders, "straight borders" † without shoulders near the middle portion, to prevent the blade from entering into the handle when one struck with it.

The blades are either nearly of the same form as the axes of stone (Fig. 36) or else somewhat enlarged at the edge. The upper portion of several have a form characteristic of Egyptian axes (Fig. 28). It is rectilinear and prolonged into a point toward the two extremities.

There were however other forms of bronze axes, besides. Among the re-productions which date from the early era of the ancient empire, axes with a half circular blade are to be seen, as in Fig. 31. This blade is massive; but later on, towards the close of the ancient empire, the blade has very often the form that is shown in Fig. 32, with two round holes near the handle. ‡ The arm represented by Fig. 33 has a similar blade with two holes, only more elongated; the surface of the handle is of silver. §

Sometimes the axe blades are pierced through and through like that

---

* According to Erman (*Ægypten*, p. 612) the middle of this facet is covered with blue enamel of the very deepest shade.

† In *Materiaux pour l'Hist de l'Homme*, 1869, pl. 19, Fig. 3, an Egytian axe is represented which, according to p. 378, should have straight borders, but the designs of the plate referred to are not sufficiently exact to draw any conclusions. I have written to the museum at Boulaq, where the figured axe should have been deposited, to inquire about it, but have received no reply.

‡ Intermediate forms between figures 32 and 33 are reproduced from the monuments at Thebes, in the *Manners and Customs of the Ancient Egyptians*, by Wilkinson (first edition), vol. I, p. 325. Comp. Lepsius, *Denkmaler aus Ægypten und Æthiopien.* Vol. II, Pl. 132.

§ Axe blades of precisely the same form as in Fig. 33 (without a handle), are deposited one at the Louvre and the other in the collection of Mr. Greenwell at Durham. In these two, as in the original of Fig. 33, the borders around the two semicircular apertures are in slight relief. Similar axes to those of Fig. 33 may be seen among the reproductions of the twelfth dynasty. Lepsius, *les Métaux*, vol. II, Pl. 132 and Wilkinson, *Manners and Customs*, vol. I, p. 325, Figs. 5 and 6.

of Fig. 34, and present divers images. Celts, with sockets similar to those which are so often found in Europe, are unknown in Egypt, but celts with pinions are met with there which approach in appearance those with sockets. The pinions, which are folded around the handle, are found only on one side; Fig. 40 represents such a celt. The latter is made of iron, but bronze celts of the same form are likewise discovered in Egypt.*

In Egyptian tombs, poniards with double edges have been found of bronze. The hilt is frequently formed from a bronze plate, the two sides covered with wood, horn, bone, or ivory.

The hilts of the poniards represented by Figs. 1 and 3–5, which are of this description, have around them a border in bronze. A like border may also be seen in the larger part of the hilt of figure 2, but the pommel is entirely of bone, or rather of ivory fastened by a rivet, parallel to the blade.

Upon the handles last mentioned, the hilt properly speaking is, as is generally the case, much large than the pommel. Such however is not always the case. A poniard of bronze discovered at Thebes, of the same type as in Fig. 9, has a pommel almost as large as the hilt.†

In the poniard represented in Fig. 9, the pommel is a little larger than the hilts.‡ The latter has two semi-circular holes and is of ivory, while the rest is of horn or hard wood, fastened with bronze rivets. In Fig. 10, the pommel is very much larger than the handle, in which are not to be included the long and narrow lobes of the handle, which comprise the upper extremity of the blade.§ Still larger is the pommel of the poniard which is represented by Fig. 11, and which we have already described; the two semi-circular holes which are seen in the pommel of Fig. 9 are likewise found in Fig. 11, as also in Fig. 10. Each of these four poniards have pommels almost circular.

---

*A similar celt in bronze, the pinions of which do not extend as far as those in Fig. 40, is deposited in the Leyden museum. Leeman's *Monuments Égyptiens du Musée de Leide*, Pl. 80, Fig. 5. Chabas, *Étude sur l'antiquite historique*, p. 76.

† The hilt is half horn, half ivory (Prisse d'Avennes *Monuments Égypt*, Pl. 46, Chabas, *Études sur l'antiquite historique*, p. 92). The work quoted by Prisse d'Avennes as well as many other books of importance for this essay, is not at Stockholm.

‡ The original of Fig. 9 is deposited in the British Museum. The handle is prolonged into a narrow tongue which crosses the hilt. (Kembler *Horæ ferales* Pl. 8, Fig. 3, p. 156.) There another poniard is mentioned deposited in the British Museum, "a bronze or silver hilt which unites the pommel of ivory to the blade." On the occasion of a session of the Institute of Archæological Correspondences at Rome, on the 28th of February, 1879, I saw a magnificent poniard of the same type as Fig. 9. It belonged to Mr. Alex. Castellani, who had received it from Marietta. The poniard, with the two usual holes, was of cedar wood, entirely covered with gold. The lower part of the hilt was of silver, ornamented with gold rivets, symmetrically placed. Along the middle of the blade was a simple line in relief, the greater part of which had sharp edges.

§ The original of Fig. 10 constitutes a portion of the collection of Mr. Greenwell at Durham. I owe the design of the latter and of other Egyptian bronzes deposited in the same collection to my friend Mr. Sven Soderberg, of Lund.

Fig. 8 shows us a poniard of bronze deposited in the museum at Berlin, the pommel of which is very much larger than the hilt. The pommel, not round, but elongated, is of ivory; the rest of a dark substance (horn or rhinocerous hide), fastened with large rivets incrusted with gold.

Sometimes the whole hilt is of metal, as in the case of one of the poniards found in the tomb of Queen A'hhotep (Fig. 18), the blade being of bronze the hilt of gold. Yet more precious is the hilt of the other poniard discovered in the same tomb (Fig. 15). The mural paintings of the tomb of King Rameses III at Thebes represent a number of arms, among others long poniards with double blades, as in Fig. 20. The blades of some are painted red, others blue or green.*

The hilts of these arms are yellow; probably they were made of gold or were gilded. An arm of similar form (Fig. 19), which must have been of bronze, since it is painted red, is seen in another mural picture.

Besides these poniards with double edges, a kind of long knife or short sword with one edge was employed in Egypt. On the Theban bas-relief, King Rameses II wears an arm of this form, and the god Ammon is quite often represented with a like arm in his hand. A bas-relief in a temple at Ibsambul, in Nubia, shows us Ammon and King Rameses III, the latter raising his hand to strike a multitude of vanquished enemies. In the hand of the god the arm reproduced in Fig. 13 is seen. It is painted red, and must consequently have been of bronze. Among the arms of mural paintings already mentioned in the tomb of Rameses III are several of this character, a few even carved (Fig. 6), but they are all blue, and consequently were of iron.

The museum of the Louvre possesses an arm in bronze of this type (Fig. 14). The blade and the hilt are fused in one piece; the hilt, which ends on the reverse side in a little eye, is ornamented with a dog very well modeled; on the blade is seen a legend in hieroglyphics.

Egyptian monuments very often represent poniards rather long (Fig. 20), but veritable swords are not seen during the period we have under consideration. Neither, as I am aware, has the discovery of a real sword in bronze been made in Egypt. It is true that in the magnificent collection of Mr. John Evans, at Nash Mill, is deposited a bronze sword which was discovered at Kawtara during the construction of the Suez canal, and consequently near the frontier. It is very uncertain therefore, whether it can be called Egyptian, at least considering that it is the sole one of its kind. The blade, 43 centimeters long, ends above in a tongue slight and curved forward in the form of a hook; at the base of the blade are two rivet holes.†

The Berlin museum likewise possesses a bronze sword which is reputed to have been discovered in Lower Egypt.‡ But this indication

* Rosellini, Monumenti Civili, Pl. 121.

† Evans. *The ancient bronze implements of Great Britain*, p. 298.

‡ Bastian and Voss. *Des Bronzeschwerter Ies K. Museums zu Berlin*, Pl. XVI, Fig. 32.

is unreliable, and so much the less probable, inasmuch as the blade in nowise recalls Egyptian poniards, but, on the contrary, resembles many European swords of bronze.

The Egyptians, like other nations, made use of lances. On Egyptian monuments these arms are sometimes seen provided with very short handles.*

Bronze barbs are also found, but not in large numbers, in the collection of Egyptian antiquities. One of these is exhibited in Fig. 41; the long socket is formed by a fold so that a lengthy fissure is seen.†

Bronze lances, the sockets of which are formed in this primitive manner, have not only been discovered in Egypt, but also in Cyprus and Greece. Some of the lance points of Egyptian bronze have a very narrow barb, others are of greater width.‡

As innumerable representations demonstrate, the bow played a prominent rôle among the Egyptians, both in war and in the chase. Consequently, a large quantity of arrow points of bronze have been found. A goodly number of them have a stalk, by means of which they are attached to the staff (Fig. 23). They are often also ornamented with two long projections from the barb (Fig. 24). Others are provided with a socket (Fig. 22). Sometimes the sockets of the arrows (Fig. 21) are formed by folding back the edges of the lower portion; that is, in the same manner as in the cases of the sockets for the lance barbs.

A large proportion of Egyptian arrow points are made with three sharp edges. Such barbs are frequent in western Asia and Greece, where they belong to epochs comparatively recent.

Sometimes upon Egyptian monuments the arrow points have a transversal edge (Fig. 25), the red color of which makes us apprehend they were of bronze.

Arrow points of silex with a transversal edge have been found in Egypt and in some European countries, such as France and southern Sweden.

Amongst the bronze implements it is necessary to remark, besides the axes already mentioned, chisels (Fig. 39), knives (Fig. 42), saws (Fig. 44), drills, awls (Fig. 46), small pincers, hooks (Fig. 45), etc. A large number of them have still retained their handles of wood or horn. Just

* Perrot and Chipiez. *Ouvr. cit.*, vol. I, Fig. 173. Comp. Wilkinson, *Manners and Customs*, p. 291. The points are often painted red, and consequently were of bronze. (Lepsius, *Les Métaux*), Pl. II, Figs. 4 and 12.

† The original of Fig. 41 belongs to the museum at Boulaq. The rent is not only to be seen upon the socket part, which is below the commencement of the blade, but also above it. A similar lance point of Theban bronze forms a part of the collection of Mr. Greenwell at Durham. Compare, *Mémoires de la Société royale des Antiquaires du Nord.* 1873-'74, p. 128, Fig. 3.

‡ The Louvre possesses an Egyptian lance point of bronze, the blade of which is not so narrow as that in Fig. 41, nor of an equal width. Still wider is a lance point which belongs to the Berlin Museum (Wilkinson, *Manners and Customs*, vol. I, p. 312, Fig. 34*a*). A lance point with a blade of unusual length, wide at bottom, but narrow at the top, is represented in the work last cited, vol. I, p. 406.

as upon the axes and poniards, are often seen upon these implements—either on the handle or the bronze itself—a legend in hieroglyphics.

The majority of the implements which we have just cited are also represented on Egyptian monuments, and are there usually painted red* (Figs. 38 and 44). Sickles and needles were also made of bronze; likewise mirrors, strings for musical instruments resembling harps, not to cite other examples.† The mirrors, which are round slabs or plates, with handles, resemble those with which we are acquainted from Estruscan tombs.

We possess as yet very few Egyptian bronzes of a well determined age, and these date almost all from ages immediately bordering on the epoch when they had begun to use iron. Now we can not respond as completely as we would wish to this important question, What forms are characteristic to each period of the Egyptian age of bronze?

It is only very seldom—as, for instance, when hilts of poniards (Figs. 9–11), or handles of axes (Figs. 30–33) are referred to—that we can follow the typologic development. Meanwhile that which we know already is very interesting. The discovery of the tomb of Queen A'hhotep proves that poniards of the type of Fig. 11 are a little anterior to the year 1500 B. C.

As a consequence the types (Figs. 9 and 10) belong to a more remote era.‡ This is confirmed by the fact that the original of Fig. 9 was discovered in the same tomb as the ax represented by Fig. 33.

This tomb ought to date from the year 2000 B. C. or thereabouts, since the axes similar to Fig. 15, as we have seen, are represented upon the monuments of the twelfth dynasty, reigning at that period. Too few Egyptian bronzes of the epoch we are examining have been until now chemically investigated. We can, however, discover that the bronze then employed in Egypt, as that used in Europe during the age of bronze, was an alloy of copper and tin, probably without the intentiona-addition of lead, zinc, or other metal. §

An Egyptian poniard analyzed by Vauquelin, containing 85 parts to 100 of copper, 14 parts to 100 of tin, and 1 part to 100 of iron, or of other metals. ||

Other arms of Egyptian bronze are composed of 94 parts to 100 of copper, 5.9 parts to 100 of tin, and 0.1 part to 100 of iron.¶

According to Wilkinson ** the proportion of tin in almost all Egyptian bronzes analyzed up to the present time is about 12 parts to 100.

---

* Lepsius. *Les Méteaux*, Pl. II. Fig. 19, of the same plate proves that bronze knives were also used for shaving off the hair.

† Lepsius. *Les Méteaux*, Pl. II, Fig. 13 (sickle), Fig. 20 (mirror), and Fig. 22 (harp).

‡ D'Athanasi. *Account of researches*, p. 183.

§ In more recent Egyptian bronzes we often meet with lead, and perhaps zinc. Bibra. *Die Bronzen der alten und altesten Volker*, , p. 94.

|| Bibra. *Die Bronzen*, p. 94.

¶ Birtish Museum. *A guide to the Egyptian rooms* (London 1879), p. 40.

** *Manners and Customs*, vol. III. The special analyses upon which this datum is based are not, however, quoted.

The Egyptians were forced to import the tin necessary for their industries, and this was certainly an enormous quantity. They probably had recourse to Asia, for this precious metal, even more indispensable in antiquity than in our own days.* Copper, on the other hand, was common, if not in their own country, at least in the immediate vicinity. The peninsula of Sinai possesses considerable mines, mining operations in which began at a period very remote.

* Erman. *Ægypten*, p. 613.

DESCRIPTIONS OF THE PLATES.

Plate I.

Fig. 1. Bronze poniard; hilt of wood and bronze ($\frac{1}{4}$).* Museum of the Louvre. (Lindenschmit; *Altherthmeümer unserer Heidenschen Vorzeit*, 2, xi, Pl. 3, Fig. 1.)

Fig. 2. Bronze poniard; hilt of bronze, wood, and ivory ($\frac{1}{3}$). Museum of the Louvre. (Lindenschmit; *Alterthümer* 2, xi, Pl. 3, Fig. 2.)

Fig. 3. Bronze poniard; hilt of wood and bronze ($\frac{1}{3}$). Museum of the Louvre. (After a photograph.)

Fig. 4. Bronze poniard; hilt of ivory and bronze ($\frac{1}{4}$). British Museum. (Kemble, *Horæ ferales*, Pl. 8, Fig. 2.)

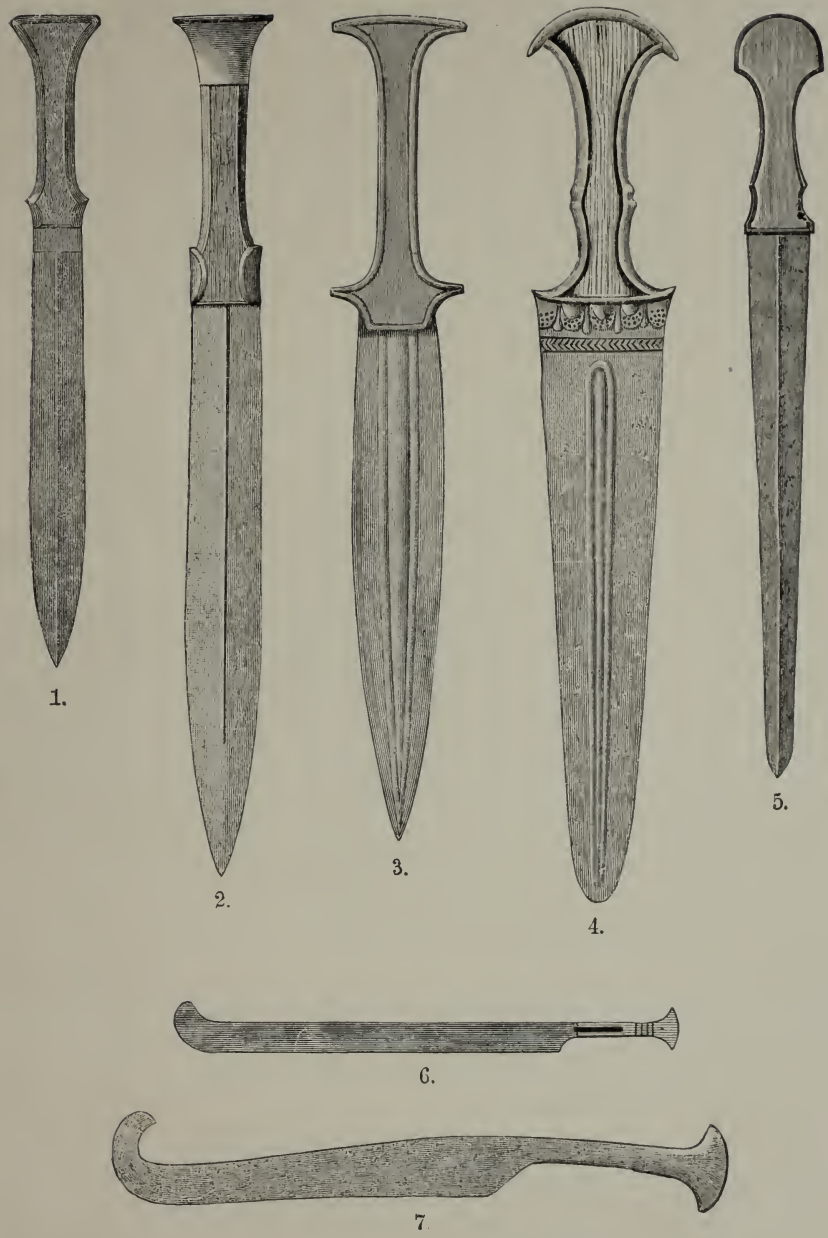
Fig. 5. Bronze poniard; hilt of bronze and wood ($\frac{1}{3}$). Turin Museum. (After a photograph.)

Fig. 6. Saber, painted blue; mural painting on the tomb of Rameses III, at Thebes. Reseillni *Moumenti civili*, Pl. 121; Lepsius *les Métaux dans les inscriptious égyptiennes* Pl. 2, Fig. 2.)

Fig. 7. Bronze knife. Collection of Mr. Greenwell at Durham, England. (After a design executed by Mr. Soderberg.)

---

* The figures indicate the relation between the objects and their natural size. It is sometimes very difficult to distinguish whether the handles are of wood or bone.



THE AGE OF BRONZE IN EGYPT.

Plate II.

Fig. 8. Poniard (bronze); hilt of bronze, horn (or rhinoceros hide), and ivory ($\frac{1}{4}$). Berlin Museum. (Bastian and Voss. *Die Bronzeschwerter des Königlichen Museums zu Berlin*, Pl. 16, Fig. 31*a*. Compare 31*b* of the same; plate sheath of leather.)

Fig. 9. Bronze poniard; hilt of bronze, ivory, and horn ($\frac{1}{4}$). British Museum. (Kemble, *Horæ ferales*, Pl. 7, Fig. 3.)

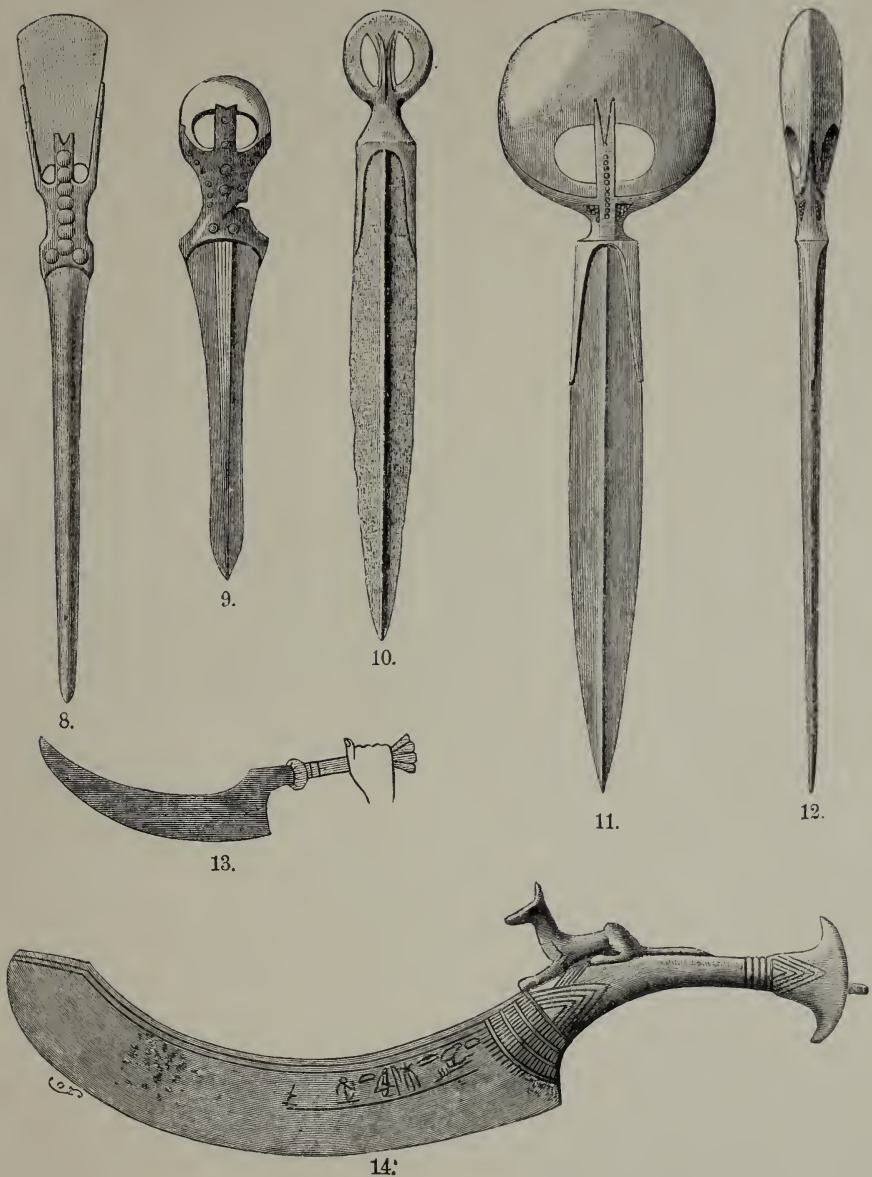
Fig 10. Bronze poniard; hilt of bronze and bone ($\frac{1}{4}$). Collection of Mr. Greenwell at Durham. (After design executed by Soderberg.)

Fig. 11. Bronze poniard; hilt of bronze and silver ($\frac{1}{2}$). Museum at Boulaq. (From a photograph.)

Fig. 12. The same poniard, side view. Perrott and Chipiez, *Histoire de l'Art dans l'Antiquité* vol. I, p. 830, Fig. 564.

Fig. 13. Arm painted red, handle yellow. Temple of Ibsambul in Nubia, in the time of Rameses III. Champollion, monuments egyptiens, vol. I, Pl. 11. Lepsius, *Les Métaux*, Pl. 2, Fig. 8.

Fig. 14. Large knife of bronze (c. $\frac{1}{2}$). Louvre Museum. (From a photograph.)



THE AGE OF BRONZE IN EGYPT.

Plate III.

Fig. 15. Bronze poniard, wood and precious stones ($\frac{1}{2}$), see the description, p. 39, found in the tomb of Queen A'hhotep. Boulaq Museum. (From a photograph.)

Fig. 16. Bronze poniard; ($\frac{1}{2}$). British Museum. (From photograph.)

Fig. 17. Bronze poniard; ($\frac{1}{2}$). Lower portion of the hilt of hollow bronze, upper portion wanting. Boulaq Museum. (From a photograph.)

Fig. 18. Bronze poniard, hilt of gold ($\frac{1}{2}$), found in the coffin of Queen A'hhotep. Boulaq Museum. (From a photograph.)

Fig. 19. Poniard painted red, the hilt yellow. Mural painting. Lepsius, *Les Métaux*, Pl. 2, Fig. 9.

Fig. 20. Long poniard painted red, hilt yellow. Mural painting on the tomb of Rameses III at Thebes (Rosellini, *Monumentii civili*), Pl. 121. Lepsius, *Les Métaux* Pl. 2, Fig. 1.

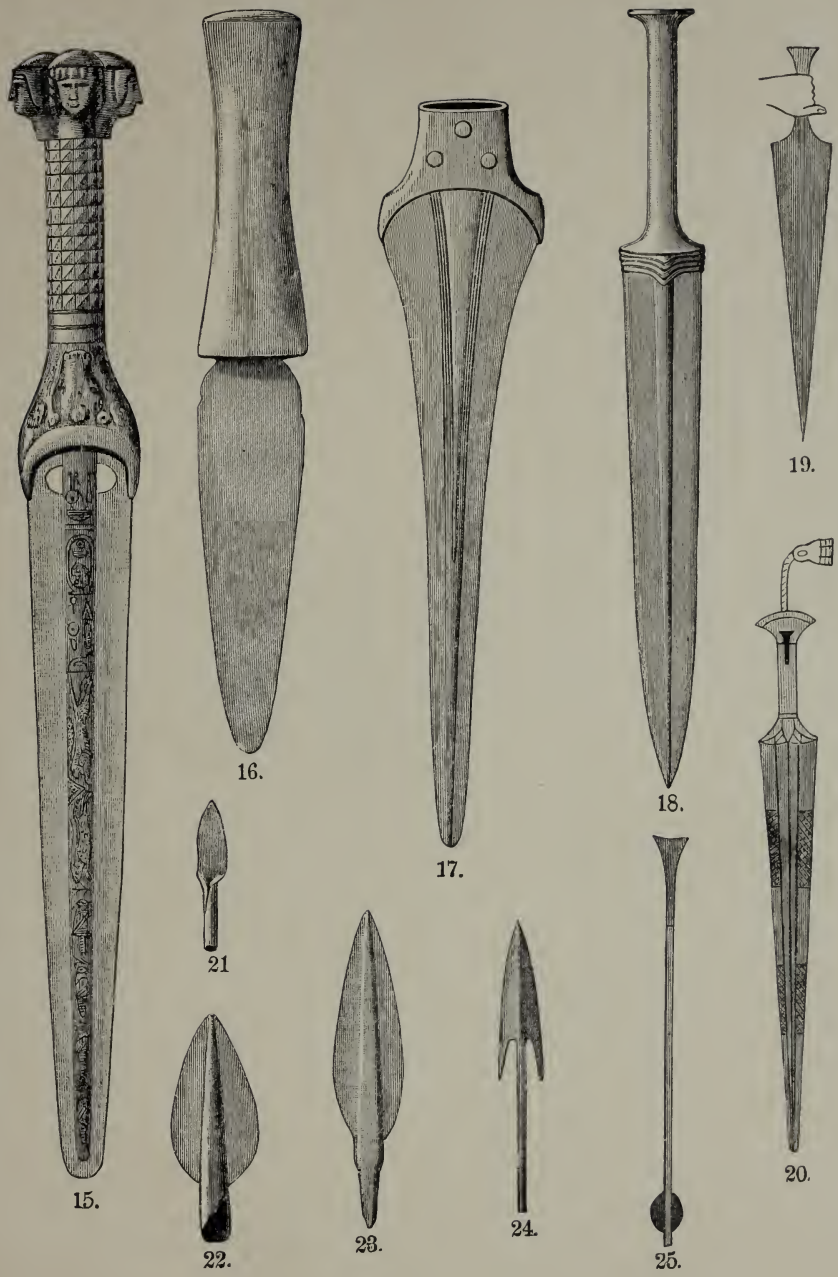
Fig. 21. Arrow point of copper (pure) ($\frac{1}{4}$). British Museum. Kemble, *Horæ ferales*, Pl. 6, Fig. 1.

Fig. 22. Arrow barb of bronze ($\frac{2}{3}$). Boulaq Museum. (From a photograph.)

Fig. 23. Arrow barb of bronze ($\frac{2}{3}$). Boulaq Museum. (From a photograph.)

Fig. 24. Arrow barb of bronze ($\frac{2}{3}$). Boulaq Museum. (From a photograph.)

Fig. 25. Arrow; barb with a transversal sharp edge, painted red. Mural painting. Lepsius, *Les Métaux* Pl. 2, Fig. 12.



THE AGE OF BRONZE IN EGYPT.

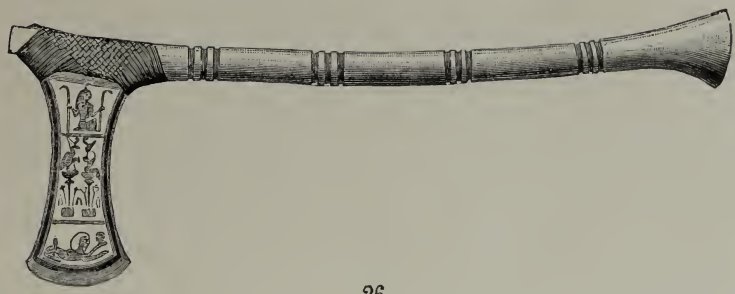
PLATE IV.

Fig. 26. Ax of gilt bronze, hilt, wood and precious stones ($\frac{1}{5}$). Coffin of Queen A'hhotep, Boulaq Museum. (From a photograph.)

Fig. 27. Reverse of the same ax. (From a photograph.)

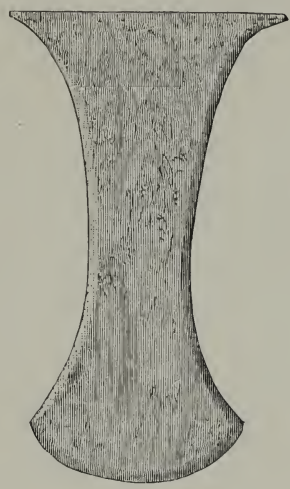
Fig. 28. Bronze ax ($\frac{1}{2}$). Boulaq Museum. (From a photograph).

Fig. 29. Bronze ax bearing the name of Thoutmos III, the handle of wood ($\frac{1}{4}$). Boulaq Museum. (From a photograph.)

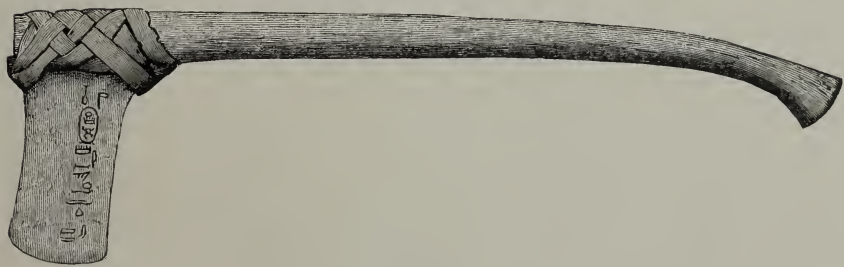


26.

27.



28.



29.

THE AGE OF BRONZE IN EGYPT.

Plate V.

Figs. 30 and 31. Axes. Mural paintings of the sixth dynasty. Lepsius, *Denkmäler aus Ægypten und Æthiopen*, vol. II., Pls. 121 and 108.

Fig. 32. Ax, blade painted yellow (or red). Mural painting of the twelfth dynasty. (Lepsius, *Denkmäler* vol. II, Pl. 151. Lepsius, *Les Métaux* Pl. 2, Fig. 2.)

Fig. 33. Bronze ax; the surface of the handle of silver ($\frac{1}{6}$). British Museum. (From a photograph.)

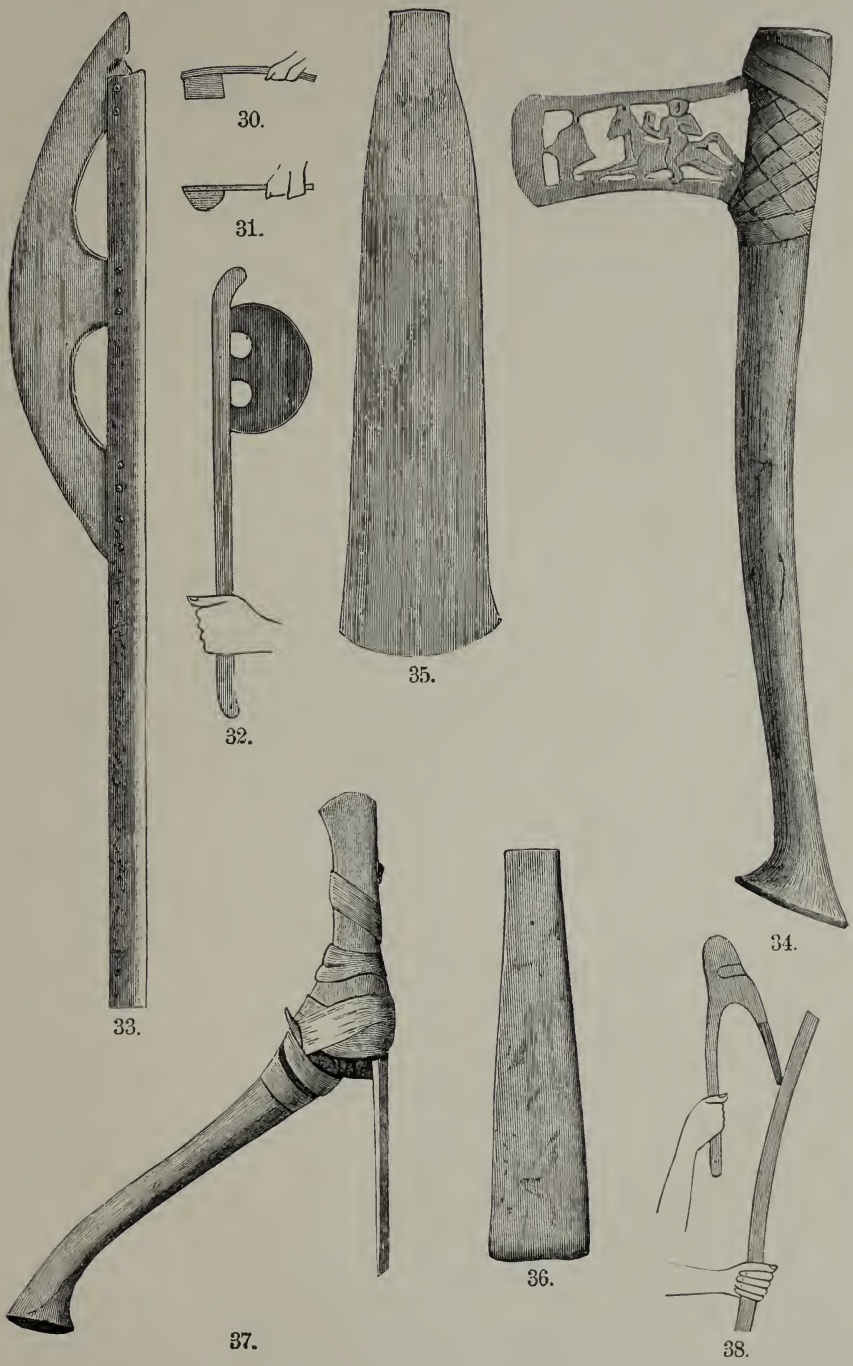
Fig. 34. Bronze ax; pierced through, handle of wood ($\frac{1}{4}$). British Museum. (From a photograph.)

Fig. 35. Bronze ax; ($\frac{1}{3}$). British Museum. (From a photograph.)

Fig. 36. Bronze ax; (c. $\frac{1}{2}$). Museum of the Louvre. (From a photograph.)

Fig. 37. Bronze ax; bearing the name of Thoutmos III; handle of wood. *Mémoires de la Société royal des Antiquarries du Nord*, 1873–'74, p. 128, Figs. 5*a* and 5*b*; front view of the blade.

Fig. 38. Ax; the handle painted red. Mural painting. Lepsius, *Les Métaux*; Pl., Fig. 15.



THE AGE OF BRONZE IN EGYPT.

Plate VI.

Fig. 39. Bronze chisels ($\frac{1}{3}$), hilt bearing the name of Thoutmos III, of wood. Boulaq Museum. (From a photograph.)

Fig. 40. Celt (c. $\frac{1}{2}$). Museum of the Louvre. (From a photograph.) The Leyden Museum possesses a celt of bronze of the same form.

Fig. 41. Lance barb of bronze ($\frac{1}{2}$). Boulaq Museum. (From a photograph.)

Fig. 42. Bronze knife (c. $\frac{1}{4}$). Boulaq Museum. (From a photograph.)

Fig. 43. Bronze saw ($\frac{1}{3}$), wooden handle. British Museum. (From a photograph.)

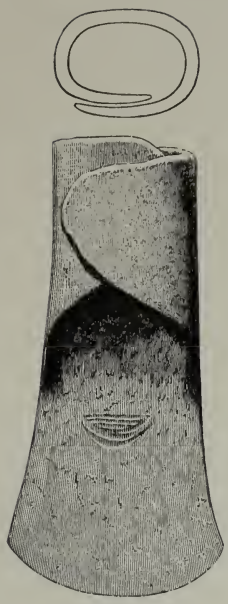
Fig. 44. Saw painted red. Mural painting. (Lepsius, *Les Métaux*, Pl. 2, Fig. 14.)

Fig. 45. Bronze fishhook ($\frac{1}{2}$). Boulaq Museum. (From a photograph.)

Fig. 46. Bronze awl ($\frac{1}{4}$), wooden handle. British Museum. (From a photograph.)

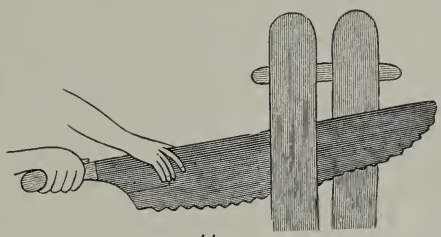
41.

39.



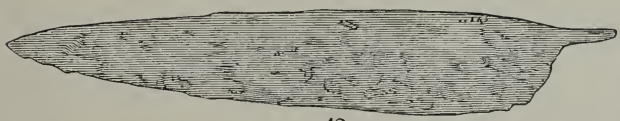
40.

45.

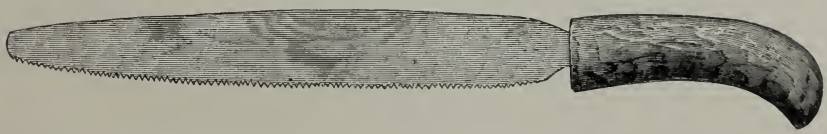


44.

46.



42.



43.

THE AGE OF BRONZE IN EGYPT.

THE MIGRATIONS OF THE RACES OF MEN CONSIDERED HISTORICALLY.*

By Prof. JAMES BRYCE.

There are two senses in which we may claim for geography that it is a meeting point of the sciences. All the departments of research which deal with external nature touch one another in and through it—geology, botany, zoology, meteorology, as well as, though less directly, the various branches of physics. There is no one of these whose data are not, to a greater or less extent, also within the province of geography; none whose conclusions have not a material bearing on geographical problems; and geography is also the point of contact between the sciences of Nature, taken all together, and the branches of inquiry which deal with man and his institutions. Geography gathers up the results which the geologist, the botanist, the zoologist, and the meteorologist have obtained, and presents them to the student of history, of economics, of politics—we might, perhaps, add of law, of philology, and of architecture—as an important part of the data from which he must start, and of the materials to which he will have to refer at many points in the progress of his researches. It is with this second point of contact, this aspect of geography as the basis for history, that we are to occupy ourselves to-night. Understanding that the Scottish Geographical Society desires not merely to present a current history of discovery, but to bring into prominence the economic, social, and political aspects of the science, and to inculcate its significance for those who devote themselves to the presently urgent problems which civilized man is called to deal with, I have chosen, as not unsuitable to an inaugural address, a subject which belongs almost equally to physical and descriptive geography on the one side, to history and economics on the other. The movements of the races and tribes of mankind over the surface of our planet are in the first instance determined mainly by the physical conditions of its surface and its atmosphere, but they become themselves a part, and, indeed, a great part, of history; they create nations and build up states; they determine the extension of languages and laws;

* Read at the inaugural meeting of the London branch of the Royal Scottish Geographical Society, April, 1892. (*The Scottish Geographical Magazine*, August, 1892; vol. VIII, pp. 400–421.)

they bring wealth to some regions and leave others neglected; they mark out the routes of commerce and affect the economic relations of different countries.

No line of historical inquiry sets before us more clearly at every stage the connection between man as an associative being—toiling, trading, warring, ruling, legislating—and that physical environment whose influence over his development is none the less potent and constant because he has learned in obeying it to rule it and to make it yield to him constantly increasing benefits. The topic is so large and branches off into so many other cognate inquiries that you will not expect me, within the narrow limits of an address, to do more than draw its outlines, enumerate the principal causes whose action it sets before us, touch upon the successive epochs which its history presents, and refer to a few out of the many problems its consideration raises. The migrations of peoples have been among the most potent factors in making the world of to-day different from the world of thirty centuries ago. If they continue they will be scarcely less potent in their influence on the future of the race; if they pass into new phases, those phases will be the expression of new conditions of society; if they cease, that cessation will itself be a fact of the highest economic and social significance.

I.—FORMS OF DIFFUSION.

At the outset it is convenient to distinguish the different forms which movements of population have taken. These forms may be grouped under three heads, which I propose to call by the names of Transference, Dispersion, and Permeation—names which need a few words of illustration.

1. By Transference I mean that form of migration in which the whole, or a large majority, of a race or tribe quits its ancient seats in a body and moves into some other region. Such migrations seldom occur except in the case of nomad peoples who are little attached to any particular piece of soil; but we may almost class among the nomads tribes who, like our own remote Teutonic ancestors, although they cultivate the soil, put no capital into it in the way of permanent improvements, and build no dwellings of brick or stone. The prehistoric migrations usually belonged to this form, and so did that great series of movements which brought the northern races into the Roman Empire in the fifth and sixth centuries of our era. In modern times we find few instances of Transference, because such nomad races as remain are now shut up within narrow limits by the settled States that surround them, which have possessed, since the invention of gunpowder and of standing armies, enormously superior defensive strength.* We should however have had an interesting case to point to had the Dutch, when pressed by the power of Philip II, embraced the offer that came to them from

* In 1771 a great Kalmuk horde moved en masse from the steppes of the Caspian to the frontiers of China, losing more than half its numbers on the way.

England to migrate in a body and establish themselves, their dairying, their flax culture, and their linen manufacture, in the rich pastures and humid air of Ireland.

2. Under the head of migrations by Dispersion I include those cases in which a tribe or race, while retaining its ancient seats, overflows into new lands, whether vacant or already occupied; in the latter event sometimes ejecting the original inhabitants, sometimes fusing with them, sometimes dwelling among them, but remaining distinct.

Examples are furnished by the case of the Norsemen, who found Iceland practically vacant, while in England they became easily, in Ireland and Gaul more slowly, mingled with the previous inhabitants. When our own ancestors came from the Frisian coast they slew or drove out the bulk of the Celtic population of Eastern Britain; when the Franks entered Gaul they became commingled with it. It is by such a process of dispersion that the British race has spread itself out over North America and Australasia. In much smaller numbers the Spaniards diffused themselves over southern North America, and the northern and western parts of South America; and by a similar process the Russians have for two centuries been very slowly filling the better parts of Siberia. Whether in any case of dispersion the migrating population becomes fused with that which it finds, depends chiefly on the difference between the level of civilization of the two races. Between the English settlers in North America and the native Indians there has been hardly any mixture of blood; between the French in Canada and the Indians there was a little more; between the Spaniards and the less barbarous inhabitants of Mexico there has been so much that the present Mexican nation is a mixed one, the native blood doubtless predominating. Something however also depends on the relative numbers of the two races; and sometimes religion keeps a dispersed people from commingling with those among whom it dwells, as has happened in the case of the Jews, the Armenians, and the Parsees. These last are a remarkable instance of an extremely small nation—for there are not 80,000 of them all told—who, without any political organization, have, by virtue of their religion, preserved their identity for more than a thousand years. Dispersion has been the most widely operative form of migration in modern times which have enabled remote parts of our large world, separated by broad and stormy seas, to be colonized more easily than in the tiny world of ancient or mediæval times was possible either by land or by sea.

3. The third form, which we may call Permeation or Assimilation, is not in strictness a form of migration at all, because it may exist where the number of persons changing their dwelling-place is extremely small; but it deserves to be reckoned with the other two forms because it produces effects closely resembling theirs in altering the character of a population. I use the term Permeation to cover those instances, both numerous and important, in which one race or nation

so spreads over another race or nation its language, its literature, its religion, its institutions, its customs, or some one or more of these sources of influence, as to impart its own character to the nation so influenced, and thus to substitute its own for the original type. In such a process the infusion of new blood from the stronger people to the weaker may be comparatively slight, yet, if sufficient time be allowed, the process may end by a virtual identification of the two. Of course, when there is much intermarriage, not only does the change proceed faster, but it tells on the permeating as well as on the permeated race. The earliest recorded instance of this diffusion of a civilization with little immixture of blood is to be found in the action of the Greek language, ideas, and manners upon the countries round the eastern half of the Mediterranean, and particularly upon Asia Minor. The native languages, to some extent, held their ground for a while in the wilder parts of the interior, but the upper classes and the whole type of culture became everywhere Hellenic. In the same way the Romans Romanized Gaul and Spain and the more fertile regions of North Africa. In the same way the Arabs, in the centuries immediately after Mohammed, Arabized not only Egypt and Syria, but the whole of North Africa down to and including the maritime parts of Morocco, and have in later times, though to a far smaller extent, established the influence of their language and religion on the coasts of East Africa and in parts of the East Indian Archipelago. There is reason to believe, though our data are scanty, that in somewhat similar way the Aryan tribes, who entered India at a very remote time, diffused their language, religion, and customs over northern Hindustan as far as the Bay of Bengal, changing to some extent the dark races whom they found in possession of the country, but being also so commingled with those more numerous races as to lose much of their own character. Hinduism and languages derived from Sanskrit came to prevail from the Indus to the Brahmaputra, although it would seem that to the east of the Jumna the proportion of Aryan intruders was very small. We ourselves in India are giving to the educated and wealthier class so much that is English in the way of ideas and literature, that if the process continues for another century, our tongue may have become the *lingua franca* of India, and our type of civilization have extinguished all others. Yet if this happens it will happen with no mixture of blood between the European and the native races, possibly with little social intimacy between them. The instances just mentioned show in what different ways and varying degrees assimilation may take place. In some of them the assimilated race still retains a distinct national character. The Moor of Morocco, for instance, differs from the Arab much as the Greek-speaking Syrian and the Latin-speaking Lusitanian differed from a Greek of Attica or a Roman of Latium. But the Finnish tribes of northern and eastern Russia, Voguls, Tcheremisses, Tchuvasses, and Mordvins, who have been gradually Russified

during the last two centuries, are on their way to become practically undistinguishable from the true Slavonic Russians of Kieff. And, to come nearer home, the Celts of Cornwall have been anglicized, and those of the Highlands of Scotland have in many districts become assimilated to the Lowland Scotch, with no great intermixture of blood.

It is worth while to be exact in distinguishing this process of Permeation from cases of Dispersion, because the two often go together—that is to say, the migration of a certain, though perhaps a small, number of persons of a vigorous and masterful race into a territory inhabited by another race of less force, or perhaps on a lower level of culture, is apt to be followed by a predominance of the stronger type, or at any rate by such a change in the character of the whole population as leads men in later times to assume that the number of migrating persons must have been large. The cases of the Greeks in Western Asia and the Spaniards in the New World are in point. We talk of Asia Minor as if it had become a Greek country under Alexander's successors, of Mexico and Peru as Spanish countries after the sixteenth century, yet in both instances the native population must have largely preponderated. If therefore, we were to look only at the changes which the speech, the customs, the ideas, and institutions of nations have undergone, we might be disposed to attribute too much to the mere movement of races, too little to the influences which force of character, fertility of intellect, and command of scientific resource have exercised, and are still exercising, as the leading races become more and more the owners and rulers of the backward regions of the world.

II.—CAUSES OF MIGRATION.

We may now proceed to inquire what have been the main causes to which an outflow or an overflow of population from one region to another is due. Omitting, for the present, the cases of small colonies founded for special purposes, these causes may be reduced to three. They are food, war, and labor. These three correspond in a sort of a rough way to three stages in the progress of mankind, the first belonging especially to his savage and semi-civilized conditions, the second to that in which he organizes himself in political communities, and uses his organization to prey upon or reduce to servitude his weaker neighbors; the third to that wherein industry and commerce have become the ruling factors in his society and wealth the main object of his efforts. The correspondence however is far from exact, because the need of subsistence remains through the combative and industrial periods a potent cause of migration, while the love of war and plunder, active even among savages, is by no means extinct in the mature civilization of to-day.

1. In speaking of food, or rather the want of food, as a cause, we must include several sets of cases. One is that in which sheer hunger, due perhaps to a drought or a hard winter, drives a tribe to move to some

new region where the beasts of chase are more numerous, or the pastures are not exhausted, or a more copious rain-fall favors agriculture.* Another is that of a tribe increasing so fast that the pre-existing means of subsistence no longer suffice for its wants. And a third is that where, whether or not famine be present to spur its action, a people conceives the desire for life in a richer soil or a more genial climate. To one or other of these cases we may refer nearly all the movements of populations in primitive times, the best known of which are those which brought the Teutonic and Slavonic tribes into the Roman Empire. They had a hard life in northern and eastern Europe; their natural growth exceeded the resources which their pastoral or village area supplied, and when once one or two had begun to press upon their neighbors, the disturbance was felt by each in succession until some, pushed up against the very gates of the Empire, found those gates undefended, entered the tempting countries that lay towards the Mediterranean and the ocean, and drew others on to follow. Of modern instances the most remarkable is the stream of emigration which began to swell out of Ireland after the great famine of 1846–'47, and which has not yet ceased to flow.

Among civilized peoples the same force is felt in a slightly different form. As population increases the competition for the means of livelihood becomes more intense, while at the same time the standard of comfort tends to rise. Hence, those on whom the pressure falls heaviest (if they are not too shiftless to move), and those who have the keenest wish to better their condition, forsake their homes for lands that lie under another sun. It is thus that the Russian peasantry have been steadily moving from the north to the south of European Russia, till they have now occupied the soil down to the very foot of the Caucasus for some 500 miles from the point they had reached a century and a half ago. It is thus that, on a smaller scale, the Greek-speaking population of the west coast of Asia Minor is creeping eastward up the river valleys, and beginning to re-colonize the interior of that once prosperous region. It is thus that North America and Australasia have been filled by the overflow of Europe during the last sixty years, for before that time the growth of the United States and of Canada had been mainly a home growth from the small seeds planted two hundred years earlier. That the mere spirit of enterprise, apart from the increase of population, counts for little as a cause of migration, seems to be shown not only by the slight outflow from Europe during last century, but by the fact that France, where the population is practically stationary, sends out no emigrants save a few to Algeria, while the steady movement from Norway and Sweden does little more than relieve the natural growth of the population of those countries. As regards European

* A succession of dry seasons, which may merely diminish the harvests of those who inhabit tolerably humid regions, will produce such a famine in the inner parts of a continent like Asia as to force the people to seek some better dwelling-place.

emigration to America, it is worth noting that during the last thirty years it has been steadily extending, not only eastward toward the inland parts of Europe, but also downward in the scale of civilization, tapping, so to speak, lower and lower strata. Between 1840 and 1850 the flow toward America was chiefly from the British Isles. From 1849 onward, it began to be considerable from Germany also, and very shortly afterward from Scandinavia, reaching a figure of hundreds of thousands from the European continent in each year. From Germany the migratory tendency spread into Bohemia, Moravia, Poland, and the other Slavonic regions of the Austro-Hungarian monarchy, as well as into Italy. To-day the people of the United States, who had welcomed industrious Germans and hardy Scandinavians because both made good citizens, become daily more restive under the ignorant and semi-civilized masses whom Central Europe flings upon their shores. At the other end of the world, the vast emigration from China is partly attributable to the need of food; but to this I shall recur presently when we come to speak of labor.

2. The second of our causes is war. In early times, or among the rude peoples, it is rather to be called plunder, for most of their wars were undertaken less for permanent conquest than for booty. The invasions of Britain by the English, of Gaul by the Franks, of England and Scotland by the Norsemen and Danes, all began with mere piratical or raiding expeditions, though ending in considerable transfers of population. The same may be said of the conquest of Pegu and Arakan by the Burmese in the last century, and (to a smaller extent) of that southward movement of the wild Chin and Kachin tribes whom our present rulers of Burmah find so troublesome. It was in war raids that the movement of the Bantu races to the southernmost parts of South Africa, where they have so largely displaced the yellowish Hottentot race, seems to have begun. So the conquests of Egypt and Persia by the first successors of the Prophet, so the conquests of Mexico and Peru by the Spaniards, though tinged with religious propagandism, were primarily expeditions in search of plunder. This character, indeed, belongs all through to the Spanish migrations to the New World. Apparently few people went from Spain meaning, like our colonists a century later, to make a living by their own labor from the soil or from commerce, which, indeed, the climate of Central and South America would have rendered a more difficult task. They went to enrich themselves by robbing the natives or by getting the precious metals from the toil of natives in the mines, a form of commercial enterprise whose methods made it scarcely distinguishable from rapine. In modern times the discovery of the precious metals has helped to swell the stream of immigration, as when gold was discovered in California in 1846 and in Australia a little later; but in these instances, though enrichment is the object, rapine is no longer the means. There are, however, other senses in which we may call war a source of movements of races. It was military policy which planted the Saxons in Transylvania and the French in Lower Canada, and the

Scotch and English settlers in the lower and more fertile parts of Ulster; it is military policy which has settled Russian colonies, sometimes armed, sometimes of agricultural dissenters, along the Trans-caucasian frontiers and on the farther shore of the Caspian. It was military policy which led Shalmaneser and Nebuchadnezzar to carry off large parts of the people of Israel and Judah to settle them in the cities of the Medes or by the waters of Babylon.*

As regards the more regular conquests made by civilized states in modern times, such as those of Finland, Poland, Transcaucasia, and Transcaspia by Russia, of Bosnia and Herzegovina by Austria, of India and Cape Colony by Great Britain, of Cochin China and Annam by France, it may be said that they seldom result in any considerable transfer of population. Such effects as they have are rather due to that process of Permeation which we have already considered.

3. Labor (*i. e.*, the need for labor) becomes a potent cause of migrations in this way—that the necessity for having in particular parts of the world men who can undertake a given kind of toil under given climatic conditions draws such men to those countries from their previous dwelling place. This set of cases differs from the cases of migrations in search of subsistence, because the migrating population may have been tolerably well off at home. As the food migrations have been described as an outflow from countries overstocked with inhabitants, so in these cases of labor migration what we remark is the inflow of masses of men to fill a vacuum—that is, to supply the absence in the country to which they move of the sort of workpeople it requires. However, it often happens that the two phenomena coincide, the vacuum in one country helping to determine the direction of the influx from those other countries whose population is already superabundant. This has happened in the case of the most remarkable of such recent overflows, that of the Chinese over the coasts and islands of the Pacific. The need of Western America for cheap labor to make railways and to cultivate large areas just brought under tillage, as well as to supply domestic service, drew the Chinese to California and Oregon, and but for the stringent prohibitions of recent legislation would have brought many thousands of them into the Mississippi Valley. Similar conditions were drawing them in great numbers to Australia, and especially to North Queensland, whose climate is too hot for whites to work in the fields; but here, also, the influx has been stopped by law. Ten or twelve years ago they were beginning to form so considerable a proportion of the population of the Hawaiian Isles that public opinion there compelled the sugar-planters to cease importing them, and, in order to balance them, Portuguese labor was brought from the Azores, and Japanese from Japan. Into Siam and the Malay Peninsula, and over the Eastern Archipelago, Chinese migra-

* So the Siamese, after their conquest of Tenasserim, carried off many of the Talain population and settled them near Bangkok, where they remain as a distinct population to this day.

tion goes on steadily; and it seems not improbable that in time this element may be the prevailing one in the whole of the Indo-China and the adjoining islands, for the Chinese are not only a more prolific but altogether a stronger and hardier stock than either their relatives the Shans, Burmese, and Annamese, or their less immediate neighbors the Malays. If in the distant future there comes to be a time in which the weaker races having been trodden down or absorbed by the more vigorous, few are left to strive for the mastery of the world, the Chinese will be one of those few. None has a greater tenacity of life.

Not unlike these Chinese migrations, but on a smaller scale, is that of Santhals to Assam, and of South Indian coolies to Ceylon (where the native population was comparatively indolent), and latterly to the isles and coasts of the Carribbean Sea. Here there has been a deliberate importation of laborers by those who needed their labor; and, although the laborers have intended to return home after a few years' service, and are indeed under British regulations, supplied with return passage tickets, permanent settlements are likely to result, for the planters of Guiana, for instance, have little prospect of supplying themselves in any other way with the means of working their estates. The coolies would doubtless be brought to tropical Australia also, but for the dislike of the colonists to the regulations insisted on by the Indian Government; so instead of them we see that importation of Pacific islanders into North Queensland which is now a matter of so much controversy. Under very different conditions we find the more spontaneous immigration of French Canadians into the northern United States, where they obtain employment in the factories, and are now becoming permanently resident. At first they came only to work till they had earned something wherewith to live better at home; but it constantly happens that such temporary migration is the prelude to permanent occupation. So the Irish reapers used to come to England and Scotland before the migration from Ireland to the English and Scottish towns swelled to great proportions in 1847. The Italians who now go to the Argentine Republic less frequently return than did their predecessors of twenty years ago.

In all these instances the transfer of population due to a demand for labor has been, or at least has purported to be, a voluntary transfer. But by far the largest of all such transfers, now happily at an end, was involuntary—I mean that of Africans carried to America to cultivate the soil there for the benefit of white proprietors.* From early in the

* I do not dwell on the slave trade in ancient times, because we have no trustworthy data as to its extent; but there can be no doubt that vast numbers of barbarians from the west, north, and east of Italy and Greece were brought in during five or six centuries, and they must have sensibly changed the character of the population of the countries round the Adriatic and Ægean. Here of course there was no question of climate, but slaves were caught because their captors did not wish to work themselves. The slave trade practiced by the merchants of Bristol before the Norman Conquest and that practiced by the Turkoman, recently, resemble these ancient forms of the practice.

sixteenth century, when the destruction of the native Indians by their Spanish taskmasters in the Antilles started the slave trade,* down to our own times, when slavers still occasionally landed their cargoes in Brazil, the number of negroes carried from Africa to America must be reckoned by many millions. In 1791 it was estimated that 60,000 were carried annually to the West Indies alone. The change effected may be measured by the fact that along the southern coasts of North America, in the West India islands, and in some districts of Brazil the negroes form the largest part of the population. Their total number, which in the United States alone exceeds 7,000,000, can not be less than from 13,000,000 to 16,000,000. They increase rapidly in South Carolina and the Gulf States of the Union, are stationary in Mexico and Peru, and in Central America seem to diminish. Though some have suggested their re-migration to Africa, there is not the slightest reason to think that this will take place to any appreciable extent. On the other hand, it is not likely that they will, except, perhaps, in the unsettled tropical interior of the less elevated parts of South America, spread beyond the area which they now occupy. The slave trade is unfortunately not yet extinct on the east coast of Africa, but it has caused so comparatively slight a transfer of population from that continent to Arabia, the Turkish dominions, and Persia as not to require discussion here.

Before quitting this part of the subject a passing reference may be made to two other causes of migration, which, though their effects have been comparatively small, are not without interest—religion and the love of freedom. Religion has operated in two ways. Sometimes it has led to the removal of persons of a particular faith, as in the case of the expulsion of the Jews from Spain by Ferdinand and Isabella, the Catholic, an event which affected not only Spain but Europe generally, by sending many capable Spanish Jews to Holland and others to the Turkish East. Similar motives led Philip III to expel the Moriscoes in A. D. 1609. The present Jewish emigration from Russia is also partially, though only partially, traceable to this cause. In another class of cases religion has been one of the motive forces in prompting war and conquest, as when the Arabs overthrew the dominions of the Sassanid kings, overran the eastern part of the East Roman Empire, subjugated North Africa and Spain; and also in the case of the Spanish conquests in America, where the missionary spirit went hand in hand with, and was not felt to be incompatible with, the greed of gold and the harshest means of satisfying it. The latest American instance

* The first negroes were brought from Morocco to Portugal in 1442, soon after which they began to be brought in large numbers from the Guinea coasts. There were already some in Hispaniola in 1502; and after 1517 the trade from Africa seems to have set in regularly, though it did not become large till a still later date. Las Casas lived to bitterly repent the qualified approval he had given to it, in the interests of the aborigines of the Antilles, whom labor in the mines was swiftly destroying; but it is a complete error to ascribe its origin to him.

may be found in the occupation and government of Paraguay by the Jesuits. Finally, we sometimes find religious feeling the cause of peaceful emigrations. The case which has proved of most historical significance is that of the Puritan settlement in Massachusetts and Connecticut; among those of less note may be reckoned the flight of the Persian fire worshippers to Western India; the Huguenot settlements in Brazil and on the southeastern coast of North America, destroyed soon after their foundation by the Portuguese and Spaniards, and the later flight of the French Protestants after the revocation of the edict of Nantes; the emigration of the Ulster Presbyterians to the United States in last century; the foundation of various German colonies at Tiflis and other places in the Russian dominions.* Nor ought we to forget one striking instance of expatriation for the sake of freedom—that of the petty chieftains of Western Norway, who settled Iceland in the ninth century to escape the growing power of King Harold the Fairhaired.

III.—CHANNELS OF MIGRATION.

From this political side of our subject we return to its physical aspects in considering the lines which migration has tended to follow. These have usually been the lines of least resistance, *i. e.*, those in which the fewest natural obstacles in the way of mountains, deserts, seas, and dense forests have had to be encountered. The march of warlike tribes in early times and the movements of groups of emigrants by land in modern times have generally been along river valleys and across the lowest and easiest passes in mountain ranges. The valley of the lower Danube has for this reason, from the fourth century to the tenth, an immense historical importance, for it was along its levels that the Huns, Avars, and Magyars, besides several of the Slavonic tribes, moved in to occupy the countries between the Adriatic and the Theiss. While the impassable barrier of the Himalaya has at all times prevented any movements of population from Tibet and Eastern Turkistan, the passes to the west of the Indus, and especially the Khaiber and the Bolan, have given access to many invading or immigrating masses, from the days of the primitive Aryans to those of Ahmed Shah Durani in last century. So in Europe, the Alpine passes have had much to do with directing the course of streams of invaders to Italy. So in North America, while the northern line of settlement was indicated by the valley of St. Lawrence and the Great Lakes, the chief among the more southerly lines was that from Virginia into Tennessee and Kentucky over the Cumberland Gap, long the only practicable route across the middle Alleghanies.

---

* The Tiflis Germans left Würtemberg in order to avoid the use of an obnoxious hymn book. The Mennonites went to Southern Russia to escape military service, but the promise made to them by Catherine II has recently been broken, and they have lately been departing to America lest they should be compelled to serve in the Russian army.

Of migrations by sea it has already been remarked that owing to improvements in navigation, they have now become practically independent of distance or any other obstacle. In earlier times also they played a considerable part, but only in the case of such seafaring peoples as the Phenicians, the Greeks, and the Northmen,—instances in which the number of persons transferred must have been comparatively small, though the historical results were profound. Those which most nearly approach the character of national movements were the transfer of a vigorous Phenician shoot to Carthage, of a mass of Greeks to South Italy and Sicily, and of the Jutes, Saxons, and Angles to Britain.

The most important physical factor in determining lines of movement has, however, been climate. Speaking broadly, migration follows the parallels of latitude, or more precisely, the lines of equal mean temperature, and not so much, I think, of mean annual heat as of mean winter heat. Although the inhabitants of cold climates often evince a desire to move into warmer ones, they seem never to transfer themselves directly to one differing greatly from that to which they are accustomed; while no people of the tropics has ever, so far as I know, settled in any part of the temperate zone. There is one instance of a north European race establishing itself on the southern shores of the Mediterranean—the Vandals in North Africa; and the Bulgarians came to the banks of the lower Danube from the still sterner winters of the middle Volga. But in the few cases of northward movement, as in that of the Lapps, the cause lies in the irresistible pressure of stronger neighbors; and probably a similar pressure drove the Fuegians into their inhospitable isle.

The tendency to retain similar climatic conditions is illustrated by the colonization of North America. The Spaniards and Portuguese took the tropical and sub-tropical regions, neglecting the cooler parts. The French and the English settled in the temperate zone; and it was not till this century that the country toward the Gulf of Mexico began to be occupied by incomers from the Carolinas and northern Georgia. When the Scandinavian immigration began, it flowed to the northwest, and has filled the States of Wisconsin, Minnesota, and Dakota. And when the Icelanders sought homes in the New World, they chose the northernmost place they could find by the shores of Lake Winnipeg, in Manitoba. So the internal movements of population within the United States have been along the parallels of latitude. The men of New England have gone west into New York, Ohio, and Michigan, whence their children have gone still farther west to Illinois, Iowa, Oregon, and Washington. Similarly the overflow of Virginia poured into Kentucky and Tennessee, and thence into southern Illinois and Missouri; while it is chiefly from the Carolinas that Georgia, Alabama, Mississippi, Arkansas, and Texas have been settled. The present negro emigration from the eastern States of the South is into Arkansas and Texas. Oregon is the only Northern State that has received any con-

siderable number of immigrants from the old slave States; and western Oregon enjoys, in respect of its maritime position, an equable climate, with winters milder than those of Missouri.

IV.—THE LARGER SERIES OF MIGRATIONS.

Without attempting to present a chronological view of the principal migrations by which the population of the world has been shifted, I will attempt to indicate very briefly the main epochs at which these have been most frequent or most important. They may be classed in five groups, corresponding to five periods in the history of those parts of the world of which we possess a history. The first epoch covers prehistoric times, times known to us only by faint traditions and by the results of philological and archæological inquiry. We are able to say that certain movements of races did take place before the date of our earliest written records, but unable to fix these movements to any point of time. Thus there is reason to believe that the Celtic races advanced from east to west, partly forcing into corners, partly fusing with, that earlier population of Gaul and Britain which is usually called Iberian, and of which the Basques are supposed to be representatives. Thus the Etruscans descended from the Alps into middle Italy, as the ancestors of the Latins and Sabellians would appear to have done at an earlier date. It seems probable that the Slavs and Letts came to the Oder and the Vistula from the southeast. Recent philological research lends weight to the view that the Phrygians and the Armenians, both races of the Indo-European family, were originally settled in southeastern Europe, and crossed the Bosphorus into the seats where authentic history finds them. At some remote but quite undetermined time Aryan invaders entered northwestern India, and slowly spread to the south and east from the Punjab; while, at a still earlier epoch, another race coming from the west passed through Beluchistan (where it has left a trace of its passage in the language spoken by the Brahuis) and moved southeastward into the Dekkan and southern India, in which its four great allied tongues, those we call Dravidian,* are now spoken by nearly 30,000,000 people. Nor have we any materials for ascertaining the time at which the Polynesian Islands were occupied by the two races, the brown and the black or negroid, which now inhabit them, and both of which seem to have come from the East Indian Archipelago, passing from isle to isle in their canoes against the trade winds that blow from the American coast. Finally, it is to prehistoric and probably to very remote times that belongs the settlement of the two American continents by immigrants from Asia, immigrants who appear to have crossed Bering Straits, or made their way along the line of the Aleutian Isles,† and thence to have slowly drifted southward from

* Tamil, Telugu, Canarese, and Malayalam.

† Some recent writers would refer the entrance of the present American races into their continent to a period so remote as that in which Asia was joined by dry land to America.

Alaska to Tierra del Fuego. That the process of settling these vast areas must have taken an enormous space of time is proved, not only by the archæological evidence drawn from human bones and other relics of primitive man, but also by the great differences, both physical and linguistic, between the various American races—differences, however, which are nowise incompatible with the doctrine of a common Asiatic origin.

The first migrations of which we have distinct historical evidence, besides those of the Phenicians and Israelites, are the movement of the Dorians into Peloponnesus and of the Æolians and Ionians to the west coast of Asia Minor. Somewhat later, in the seventh century, B. C., collisions seemed to have occurred among the nomad tribes to the north of the Black and Caspian seas, which led to the irruption of a people called Cimmerians, who advanced as far as Ephesus, and part of whom seem to have permanently settled on the south coast of the Euxine, and of a host of Scythians who ravaged Western Asia for many years, and were bought off by King Psammetichus on the frontiers of Egypt. Whether any permanent settlements followed these irruptions does not appear, but they are interesting as the first of the many instances in which the roving people of the steppe have descended on the settled States to the south, carrying slaughter and rapine in their train.

Passing over such minor disturbances of population as the Celtic occupation of North Italy and of that part of Asia Minor which from them took the name of Galatia, and passing over also the premature descent of the Cimbri and the Teutones into the Roman world in the days of Marius, who slaughtered them at Aix (in Provence) and Vercelli, we arrive at the third great epoch of movement—that which the Germans call *par excellence* the wandering of the peoples (Völkerwanderung). The usual account describes this movement to have begun from the nomads of Mongolia, living near the Great Wall of China, one tribe aggressing on or propelling another, until those who dwelt westward near the Caspian precipitated themselves on the Goths, then occupying the plains of the Dnieper and Dniester, and drove them across the Danube into the Roman Empire. Whether this was the originating cause, or whether it is rather to be sought in a lack of food and the natural increase of the tribes between the Baltic and the Euxine, there certainly did begin with the crossing of the Danube by the Goths, in A. D. 377, an era of unrest and displacement among all the peoples from the Caspian to the Atlantic, which did not end till the destruction of the Scandinavian power in Ireland at Clontarf, in 1014, and the rolling back of the great Norwegian invasion of England, at Stamford Bridge, in 1066. The Goths, the Vandals, Suabians, Burgundians, Franks, Saxons, Lombards settled in various provinces of the Roman Empire and founded great kingdoms. Minor tribes, such as the Alans, Rugians, and Herulians, moved hither and thither, without effecting

any distinct and permanent settlement. A vast multitude of Huns ranged across Central Europe, carrying destruction as far as the Seine. Various Slavonic tribes occupied the countries along the Danube and the east coast of the Adriatic; they even filled the isles lying off the Dalmatian coast (where only Slavonic is now spoken), and descended into Greece, in the modern population of which they form a large element. The Bulgarians, a Finnish people from the Volga, settled among the Danubian Slavs and adopted their language, while the Avars, penetrating farther west, held the great Hungarian plain for two centuries. Last of all, at the end of the ninth century, came the Magyars, another Finnish tribe, who retained their old language and have played a brilliant part in history. A century before they entered Hungary, the Norsemen and Danes had begun those piratical expeditions which ultimately turned into migrations, largely changing the population of eastern Britain and of northern France. At one moment the Northmen of Iceland seemed on the point of spreading from their settlement on the coast of East Greenland into North America, where they made descents at points the most southern of which have been plausibly conjectured to lie in Massachusetts or Long Island. These expeditions met with so much resistance from the natives that the idea of permanent settlement, apparently for a time entertained, was abandoned. The Norsemen had not, like the Spaniards five centuries later, and the English of the seventeenth century, the advantage of firearms, and they came from a very small nation, which could not afford to waste its men; so this case has to be added to that list of attempted colonizations which might, like the settlement of the Phocæans in Corsica and the Huguenots in Brazil, have changed the course of history had they but prospered. These seven centuries of unrest left no population in Europe unchanged, and gave birth not only to the states and nations of the middle ages and the modern world, but to modern civilization as a whole, creating new tongues and new types of culture from the mixture of the intruding races with the provincial subjects of Rome.

The fourth group of migrations overlaps in time that which we have just been considering, and in three countries overlaps it also in space—viz, in North Africa, in Spain, and in the Thraco-Danubian lands. But its origin was wholly distinct and its character different. It begins with the outbreak of the Arabs from their remote peninsula immediately after the death of Mohammed—we may date it from the first defeats of the Romans in Syria in A. D. 632, and of the Persian in A. D. 635—and it did not quite end till the cession of Podolia to the Turks, ten centuries later, in A. D. 1695. It changed the face of Western and Southern Asia, as the Völkerwanderung changed that of Europe, yet it involved far less transfer of population, and worked more by way of permeative conquest than of migration proper. The Arabs spread over Irak, Egypt, Syria, North Africa, Sicily, and the Iberian peninsula; twice they laid their grasp on the southeastern corners of Gaul.

Their new religion gave an Arab tinge to the literature and habits of Persia and Western Turkistan; its influence is strong to-day in the East Indian Archipelago and on the coasts of East Africa, as well as in the vast inland region from Timbuctoo to Somali Land. After their conquering force had fully spent itself, the initiative passed to the Turks, and an infusion of Turkoman blood and Musselman ideas helped to transmute the former subjects of the East Roman Empire in Asia and Europe into the so-called Ottomans of to-day. The wave has for two centuries been visibly receding. Since 1878 we have seen the Mohammedan Beys retiring from Bosnia as they retired thirty years ago from Servia; the Circassians, and still more recently, some of the tribes of Daghestan, have gone forth from their mountain homes; the Pomaks are beginning to leave Bulgaria; it is probable that in forty years more hardly a Musselman will be left on European soil, unless the jealousies of European powers should still keep the barbarian enthroned in Constantinople. Not less remarkable than the movement of the Arabs to the Oxus and the Tagus, and of the Turk from the Oxus to the Adriatic, was the movement of the races from beyond the Indus and the Hindu Kush into India. The irruptions which begin with the expedition of Mahmud of Ghazni in the eleventh century brought some of the mixed Central Asiatic races, who passed as Moguls, and a probably greater number of Pathans (Afghans) into Upper India, in parts of which they sensibly affected the character of the population. Here too, more was done in the way of assimilative influence than by an infusion of blood, for the Musselman bands carried their religion to the shores of the Bay of Bengal and far into the Dekkan; they introduced a new and splendid style of building and an exquisite richness of decoration; their deeds were recorded by the first regular chroniclers of India. In a fourth region, that of the countries north of the Black Sea, the irruptions of Zinghis Khan and his sons brought about some permanent changes. But it is doubtful how far the presence of such Tartar and Mongolic tribes as still remain in the Crimea and along the Volgo is due to those invasions; and since, whatever their consequences may have been, they are not due to Islam, for the Mongols were heathen, they do not fall within the group of migrations we are now considering.

The fifth group begins with the discovery of America in 1492, if we ought not rather to date it from the first long voyages of the Portuguese, opening with the passage of Cape Bojador in 1435 (under an English captain) and culminating in the rounding of the Cape of Good Hope and opening of the sea route to India, by Bartholomew Diaz in 1486, followed by Vasco de Gama's voyage to Malabar twelve years later.

Four great eras of settlements belong to this group. The first is that of the Spaniards and Portuguese in tropical America; the second is that which brings the negroes from Africa to America; the

third is the colonization of the temperate parts of the North American coast by the English, French, and Dutch in the seventeenth century; the fourth is the immense outflow from Europe, not only to America but also to Australasia, and—in a much smaller degree—to South Africa, an overflow mainly due to the progress of physical science; firstly, in introducing the use of steam for ocean voyages, and, secondly, in so accelerating the growth of population in Europe that the impulse toward less crowded lands became stronger than ever before. The scale of this outflow of the last seventy years has been far larger than that of any previous time, and has indeed become possible only because ocean transit is now so swift, safe, and cheap. The export of Chinese to America, and of Indian coolies to and fro in the tropics, is in like manner attributable to the cheapness with which they can now be carried for long distances, as well as (in the case of the coolies) to the increased demand for tropical products which the growth of population and of wealth in the north temperate zone has created.

V.—THE CORRELATIONS OF MIGRATION.

Among the many questions suggested by the facts we have noted, I will advert to two or three only.

One of these bears on the analogy between the migrations of mankind and those of other animals and of plants. If the majority of our geologists are right in holding that man existed in those very remote times in which great changes of climate were still taking place, the analogy must then have been close. Races of men may, in palæolithic times, have moved northward or southward, according to the recession or advance of the great ice sheet that once covered the northern part of the north temperate zone, just as we know that animals moved, and just as we find that certain species of plants have, in our latitude, sometimes occupied the low country, and sometimes retired to subarctic regions or ascended to the tops of the loftiest mountains. It has been lately maintained that the Eskimo of Arctic America are the descendants of the Cave men of Britain and France, driven north many thousands of years ago by the growing mildness of the climate. We know that changes in the level of the sea have produced revolutions in the fauna and flora of countries, not only by affecting the course of ocean currents, and thereby the climate, but also by bringing, when lands formerly separated became parts of the same continent, species from one land to another, where the incomers overpowered or expelled the old inhabitants, or became, under new conditions and through the struggle between competing species, themselves so modified as to pass into new forms. If man existed at a time so distant as that wherein Bering Straits and the North Sea and part of the Mediterranean were dry land, we may conjecture, from the influence of these physical changes upon the animal and vegetable world, what their

influence may have been upon him in causing tribes to move from place to place, and in bringing about alterations of racial types.

The geological record supplies ample evidence how greatly the species of animals and plants have transferred themselves from one dwelling place to another in distant ages. The horse, in his earlier forms, was abundant in America, but he vanished there, and had been long extinct when the Spaniards of Cortez won Mexico by the terror he inspired. The camel, it appears, was originally a New World beast, and the gigantic *Sequoia*, of California, a European tree. But it is seldom that we are able to fix the causes which have brought about these transferences. And even with regard to those comparatively few migrations of animals which have occurred within recent times it is seldom that any palpably operative ground can be assigned. The latest instance of any considerable migration, apart, of course, from the agency of man, is the invasion of Europe by the brown rat, a native, it seems, of East Central Asia, which has practically expelled the black rat from Europe, just as the latter has been ejecting weaker rodents from South America.

In prehistoric times the movements of animals must have frequently told upon man. It appears that some centuries before our colonists entered North America the buffalo had begun to move eastward from the prairie highlands in and near the Rocky Mountains toward the Mississippi; and in order to tempt him still farther eastward the Indians began to burn the forests which covered its banks and those of the Ohio River in what are now the States of Illinois, Indiana, and Kentucky. The abundance of animal food thus brought within their reach seems to have checked the progress of the tribes in the arts of sedentary life, throwing them back into the stage of hunters.

Since man, in his advancing civilization, has begun to domesticate animals and to understand how to improve the soil and make full use of its capacities, the chief transfers of animals and plants to new regions have been due to his action. He has peopled the New World and Australasia with the horses, cattle, and sheep of Europe, turning to account tracts which might otherwise have remained a wilderness. The trees he has brought from distant regions have sometimes grown to forests and changed the aspect of whole countries. Thus, the tops of the Neilgherry hills in Southern India have nearly lost their beautiful ancient woods, and are now, since the English took them in hand, covered with the somber *Eucalyptus* and *Acacia melanoxylon* from Australia, or with plantations of tea from China, or of quinine from Paraguay. The landscape of Egypt, as we see it, must be quite different from that which Moses or Herodotus saw; for most of the trees belong to species which were then unknown on the Nile. Many creatures and many plants have also followed man without his will. The rats which our ships carry, and the mosquitoes whose eggs lurk in the water barrels, find their way to land and plague new countries; the English sparrow is now a nuisance in North America, though less pernicious than the

English rabbit in Australia. Species of shrubs and herbaceous plants, the seeds of most of them brought accidentally from America or Asia, have thrice overrun the Hawaiian Islands, so that the present vegetation of the group is largely different from that which Cook found little more than a century ago. Thus the migrations of men, which nature once governed, have now come to be followed by those of other creatures, and are the source of many a change upon the face of nature herself.

VI.—INFLUENCES RESULTING FROM MIGRATION.

If we ask what has been the result of the changes we have been considering on the political organizations of mankind, and on the types of human culture, the answer must unquestionably be that they have become fewer and fewer. From the beginning of authentic history the process of reducing the number of tribes, of languages, of independent political communities, of forms of barbarism or of civilization, has gone on steadily, and indeed with growing speed. For many parts of the world our data do not go far back. But if we take the part for which the data are most complete, the basin of the Mediterranean, we find that now there are only nine, or at the most ten, languages (excluding mere dialects) spoken on its coasts, while the number of States, counting Montenegro, Egypt, Malta, and Morocco as States, is ten. In the time of Herodotus there must have been at least 30 languages, while the independent or semi-independent tribes, cities, and kingdoms were beyond all comparison more numerous. The result of migrations has been to overwhelm the small tribes and merge them in larger aggregates, while the process of permeation, usually, though not always, a sequel of conquest, has assimilated even those among whom no considerable number of intruders came. Sometimes the mere contiguity of the new and stronger race extinguishes the weak one, as in the case of the Tasmanian aborigines.* But more frequently the weaker is simply absorbed into and accepts the language and general type of the stronger, which is not necessarily the more gifted or the more civilized; and thus Britain has become Anglicized, the Celtic population retaining its languages and some of its distinctive marks only in western and mountainous corners; thus the Wends of North Germany have been Germanized, thus the Laps of the extreme north of Europe are being absorbed by the Norwegians, Finns, and Russians; thus some of the Albanian clans are being Hellenized; thus the Talains of Pegu are becoming merged in the Burmese, as possibly the latter may ultimately be in the Chinese. The remarkable thing is that neither this blending of races, nor the transfer of races to new climatic and economic conditions, tends to develop new types to anything like the same extent as

* So the Guanches of Tenerife soon disappeared as a distinct race, though some of their blood remains; so the Maories and native Hawaiians have become greatly reduced in numbers, and are likely to become before long extinct.

it destroys the old ones. The Crown is allowed to create one new Irish peerage for every three that die out. Nature uses her prerogative far more sparingly; she does not produce a new type for ten that vanish. Since the nations of modern Europe took their present distinct characters with their languages and their local seats between the sixth and the eleventh centuries, no new nation has appeared in Europe, nor is there now the least likelihood that any will. Neither has the settlement of European man in the New World wrought any marked changes in national types even when there has been a blood-mingling on a great scale. The average Mexican, who is by extraction more than half an Indian, is for most practical purposes, religious, social, and ethical, a Spaniard. The man of Pennsylvania or Ohio is still more palpably an Englishman, nor does the immense infusion of Irish and German blood seem likely to affect the Anglo-American type as it fixed itself a century ago. Nothing shows more clearly the strength which a well-established racial character has than the fact that the climatic and economic conditions of America have so little altered the English settlers in body, so comparatively little even in mind. Nothing better illustrates the assimilative power of a vigorous community than the way in which the immigrants into the United States melt like sugar in a cup of tea, and see their children grow up no longer Germans or Norwegians, or even Irish or Italians or Czechs, but Anglo-Americans. With the negroes, on the other hand, there is practically no admixture; and so far as can be foreseen they will remain, at least in the sub-tropical parts of the South, distinctly African in their physical and mental characteristics for centuries to come. The same remark holds true of the white and black races in South Africa, where the process of blood mixture, which went on to some extent between the Dutch and the Hottentots, has all but stopped.

Will this process of extinguishing and assimilating the weaker nationalities and their types of culture continue into a distant future? Have those movements of population which have been hitherto so powerful a factor in that process nearly reached their limit? Since a time long before the dawn of history the various races seem to have been always in an unstable equilibrium, some constantly pressing upon others, or seeking to escape from crowded into vacant, from cold or sterile into more genial or more fertile, lands. Is the time near at hand when they will have settled down in a permanent fashion, just as our globe itself has from a gaseous state solidified by the combination of its elements into its present stable form?

Over large parts of the earth this time seems already within a measurable distance. Nearly all of the north temperate zone, except parts of southwestern and southeastern Siberia (especially along the lower Amour), and parts of Western Canada, is now occupied, and most of it pretty thickly occupied. Districts there are which may be more closely packed: the Western United States, for instance, though

all the best land has already been taken up, can support a far larger population than they now have, and the same may be said of large tracts along the Alleghanies. But the attractions to emigrants become daily slighter as the conditions of agriculture grow less favorable through the inferior quality of the untouched land and the approaching exhaustion of that which has been tilled for two or three decades, not to speak of that vast natural increase of the population already on the spot, which intensifies the competition for employment. We may conjecture that within the lifetime of persons now living the outflow from Europe to North America will have practically stopped. A somewhat longer time will be required to fill not only the far less attractive parts of Northern Asia I have mentioned, but also such scantily inhabited though once flourishing regions as Asia Minor, Mesopotamia, and Persia, because a more torrid sun, and atrocious misgovernment, keep these regions, so to speak, out of the market. In the Southern Hemisphere, whose land area is far smaller, there are the temperate districts of Australia and South Africa, of which, so far as our present knowledge extends, no very large part has moisture enough to be available for tillage; while in South America there are La Plata, northern Patagonia, and the highlands of Bolivia, Peru and Ecuador.* The elevation above the sea of these latter tracts gives them a tolerable climate, but their wealth lies chiefly in minerals, and the parts which are both healthy and fit for agriculture are of comparatively small extent. There remain the tropics. Vast regions of the tropics are at present scantily peopled. Most of equatorial South America is a forest wilderness. Much of tropical Africa—where it is not condemned to sterility by the want of water—seems to have a population far below what it could support, owing not merely to the wars and slave raids which devastate the country, but also to the fact that peoples unskilled in tillage can not make the soil yield anything like its full return of crops. The same remark applies to Borneo, Celebes, New Guinea, Luzon, and some of the other isles of the Eastern Archipelago, among which only Java has as yet seen its resources duly developed. That there will be considerable migrations and shiftings of population among the races that now inhabit the tropics is probable enough. India (except the central provinces and Assam) and China are both filled to overflowing, and will doubtless continue to send out streams of emigrants which may in time fill up the vacant spaces in the Eastern Archipelago, perhaps in South America, perhaps even in Africa, unless some of its indigenous races should ripen into a greater capacity for patient and steady toil than any, except the Egyptian, has yet shown. But none of these tropical peoples, save the Chinese—for Japan lies outside the tropics—has a native civilization, or is fitted to play any part in history either as a conquering or as a thinking force, or in any

* The elevated parts of equatorial Africa are much smaller, though possibly large enough to support a European population of some few millions.

way, save as producers by physical labor of material wealth. None is likely to develop toward any higher condition than that in which it now stands, save under the tutelage, and by adopting so much as it can of the culture, of the five or six European peoples which have practically appropriated the torrid zone, and are dividing its resources between them. Yet the vast numbers to which, under the conjoint stimuli of science and peace, these inferior black and yellow races may grow, coupled with the capacity some of them evince for assimilating the material side of European civilization, may enable them to play a larger part in the future of the world than they have played in the past.

It is, of course, possible that the great European peoples, or some of them, may, after a few generations, acquire the power of thriving in the tropics, of resisting malarial fevers, and of rearing an offspring which need not be sent home to a cold climate during the years of boyhood. We may call it possible, because our experience is still too short to justify us in calling it impossible. But it seems so far from probable that in considering the future of the leading and ruling races of the world we must practically leave their permanent settlement in the tropics out of the question, and restrict our view to the two temperate zones. In these, as has been said, there is no longer room and verge for any great further removal of masses of men from one country to another. If, indeed, we were merely to look at a map indicating the comparative density of population in Northern Asia, Europe, and America, and see how much denser it is in the agricultural parts of France or Germany, for instance, than in Southwestern Siberia or the northwest of the United States and Canada, we might fancy the space remaining to be sufficient for many centuries to come. But if we were to compare such a map of to-day with a similar map of the world in 1780, and note how much of what would then have been marked as empty space, including all the vast area between the Alleghanies and the Pacific, has now been occupied, we shall realize the immense advance that has been made towards the establishment of an equilibrium of population and the relative shortness of the future during which we can look to emigration as a remedy for the evils which afflict the toiling masses of Europe. In this respect, as in many others, the world seems to be entering on a new era, whose phenomena will prove unlike any that have gone before.

It may be thought that as migrations have been a frequent cause of war in the past, the establishment of such an equilibrium will make for peace. But it must also be remembered that the pressure of each nation on its neighbors, and of the members of each nation on one another, tends to grow more severe with that severer struggle for subsistence which increasing numbers involve, and which, after a few more generations, the outlets that now still remain will no longer relieve.

THE "NATION" AS AN ELEMENT IN ANTHROPOLOGY.*

By Daniel G. Brinton.

The subject which I bring before you is one which I have selected in order to impress upon you forcibly the true breadth and full meaning of the science toward the cultivation of which we have assembled at this time.

There is no other word which so thoroughly expresses the purpose of this branch of learning as that which we have adopted—Anthropology, the science of man, the study of the nature of man, the search for and correct expression of those laws, and all the laws, which govern the birth, growth, development, and decay of all his traits, powers, and faculties.

Anthropology means this, and nothing less than this. Its motto is that of the character in the Terentian drama—

"*A me nullum humanum alienum puto.*"

It embraces everything and excludes nothing which pertains to humanity, whether in the individual or in his various aggregations. It omits no part or function of him as unworthy of its notice; it admits the existence of none so superior or sacred as to be beyond the pale of its investigations. The field which it goes forth to reap is the world, and its harvest season covers all time since man first set foot upon it.

It is signally unfortunate that the full connotation of the term has not been constantly present in the minds of those who have pursued the science. We should not then have witnessed the cheerless spectacle of one school of anthropologists claiming that man is nothing more than the highest mammal, and that the study of his anatomical and physiological relations exhausts the definition of their science, and that those who go beyond these are merely "historians and men of letters;" or that of another school, which, disregarding the incalculable potency of man's physical conditions, seeks to erect the science exclusively on the basis of the products of the mental faculties, his arts, institutions, religions, and languages.

*Presidential address before the International Congress of Anthropology at Chicago, 1893. (From proceedings of the congress, pp. 19–34.)

Each is equally in error. No correct and comprehensive idea can be formed of the various elements which have rendered man what he is, or any race or stock of men what it is, unless all these phenomena receive due consideration, and the various agencies which influence them are weighed with impartial fairness. The historian must become an anatomist, the anatomist a linguist, if he would reach positive results in this study.

You observe that the programme of this congress includes physical anthropology, archæology, ethnology, folk-lore, religions, and linguistics. It would be an epoch in the history of the science, a notable era in its development, if the labors we are about to enter upon should lastingly impress on all who pursue this branch that every one of these departments is equally important, that not one of them can be neglected or overlooked, that the richest in results is still but *primus inter pares*, a brother among brethren.

To illustrate how closely the multitudinous influences which they represent are woven together, and how each bears upon the whole nature of man, I shall consider with brevity in what manner that entity which we call a "nation" appears as an element in anthropology. I have been partly, though by no means wholly, led to make this selection because this particular question has been much misunderstood in some quarters and its bearings misconceived. As late as at the congress at Moscow last year, a distinguished writer in our branch of science said, "Nationality has nothing to do with anthropology. It is a product of history and concerns history only."

So far from this being correct, I shall endeavor to show that nationality has ever been and is to-day an agent more powerful in modifying both the physical and the psychical elements of man than either race, climate, religion, or culture; and therefore that it must constantly occupy the attention of the anthropologist, whether his researches are in the purely physical or in the intellectual fields.

I desire to emphasize the fact that the anthropologist will never fully comprehend the science which he professes to follow, will never attain the preception of its whole significance, if he omits from its study, as not pertaining strictly to it, any influence whatever which bears upon and modifies in any direction the evolution of the human species. This the nation does with a directness and a potency which can not be misunderstood or called in question.

Let us inquire what it is we mean by the expression "a people" or "a nation," when we use these terms as synonymous. I can find no more profound and true definition than that given by the most philosophic English poet of this century, Robert Browning, in these words:

> "A people is but the attempt of many
> To rise to the completer life of one."

The incompleteness and imperfectness of the life of the isolated individual, and his conscious or unconscious aspirations for completion

and perfection, are the motives which have ever urged man to establish those relations with his fellows which result in what we call social ties or bonds.

Although to the superficial observer these seem to have been most heterogeneous and fortuitous, a comprehensive analysis reduces them to a very few so far as their guiding principles are concerned. Here as elsewhere in ethnology we are impressed with the paucity, yes, I may even say the poverty, of the resources which have been utilized by man in his upward march to conscious culture.

Wherever we find men united together under some form of social compact, we shall find also that this compact will fall under one of three categories. It is based upon community, either real or theoretical, of blood, of territorial area, or of purpose. These three forms are mutually incompatible; they are exclusive of and in sharp contrast with one another; they react very differently upon the individual and the race; and they belong markedly to different periods in the history of a people, to different stages of its advancement in culture.

It may be laid down as a rule with few or no exceptions that the earliest form of the social bond is one of blood, of kinship, of consanguinity and affinity. The unit of the primitive horde is the family; the one cohesive principle which it recognizes as socially binding is purity of descent, the maintenance of the integrity of the stock, as its members understand it. Here then we see a mighty influence at work to preserve in primitive times and conditions the unity of the physical type. The visible aim of communities in the lower stages of culture is to preserve at all costs the characteristics of the race to which they belong, and the particular traits of the variety of that race as inherited from their ancestors. This is the guiding principle of what is known as matriarchy and the custom of tracing the genealogical line through the maternal and not through the paternal ancestry. Positive certainty as to parentage must in every case be limited to the mother, and for that reason the female line always insures a higher probability of purity of descent.

Of course the degree with which the conservation of the type was really maintained under this system depended on the local laws or customs regarding marriage and the fidelity required of married women. It is true that in both these respects there is considerable divergence in early conditions. In some places exogamous marriages prevailed; that is, the wife must not be an acknowledged relation of the husband; more frequently, marriages must be endogamous, that is, she must be of his recognized kin; though often this again is limited, as that she must not be an offspring of the same mother, or not be within certain degrees of kinship. Reminiscences of these restrictions still prevail in civilized communities, in the laws prohibiting the marriage of near relations, or, as in England, prohibiting marriage with a deceased wife's sister.

In spite of these limitations, which differ widely in different tribes, the general influence of the principle of consanguinity as the basis of the social compact unquestionably aided through countless ages to individualize the physical types of the human species, and thus to develop and render permanent its races and varieties as we now know them.

So powerful was this prejudice in favor of the ancestral type, that it was a general custom in primitive times to destroy at or shortly after birth any aberrant types, and to bring all into accord with the tribal idea. For instance, in certain parts of Mexico there is a tendency to congenital albinism in the native population; and before the conquest all children displaying this tendency were sacrificed to the gods before the age of puberty. Among the Papuans, when a child is born of a lighter color than the average of the tribe, it is assiduously held in the smoke of green branches until it is tanned to the proper hue. Indeed, whenever there was any material variation from the received type, the infant was sure not to live to that period of life when he or she could transmit it to offspring; and thus a potent factor in the evolution of the species toward modified forms was absent throughout all the childhood of the human race, owing to the conditions of the prevailing social compact.

The somatologist will object to this, that in the very earliest times and within limited areas we find that a wide diversity of type prevailed. For instance, I suppose the oldest remains of the human race found up to the present have been unearthed in Western Europe. But these venerable relics show the existence there in remotest times and at no great distance apart (not more than a few days' walk of an active pedestrian), of men with broad heads, and others with narrow heads, with narrow faces and with wide faces, with expanded flat noses and with narrow aquiline noses, of stature below the medium and others above the medium; and we may reasonably conclude from their descendants that some were blonds with yellow hair, while others were swarthy brunettes with locks like the raven's wing. So that Prof. Kollmann, who has made this subject a special study, can not see his way clear to admit less than four different races struggling for the soil of Western Europe in pre-historic times.

Yet if we may judge from some historic data and all analogy, these ancient peoples, like all others, strove to retain in its purity the type of their ancestors by a social organization looking to that end.

Two customs prevail everywhere in primitive life which largely counteract the result of consanguine marriages; the one is adoption, the other concubinage. Usually, in their unceasing wars, the males of conquered tribes were killed and the women taken as captives, thus introducing through the females of another line the peculiarities of their variety or race.

In some instances however, the males were in part preserved and

adopted into the clans of the conquering tribe, either as members or as slaves. In either case they led to a modification of the ascendant type.

So varied were and are the customs and rules of primitive peoples in all these respects that it would be vain to attempt to establish a formula representing the degree in which the integrity of the racial or ethnic type was maintained; but the aim of their institutions being always and definitely this, we may be sure that they tended very positively to preserving the lineage undefiled, and to perpetuating the physical and mental traits of each community. When this did not occur, it was in contradiction to the theory of the social compact, and arose from ignorance of the natural conditions which insure perpetuity of type, or their disregard, owing to the cravings of individual appetite.

In entire contrast to all this are both the theory and the practice which we find in the next higher step in social relations, that which has for its basis a geographical or territorial concept.

In this, it is not the notion of kinship but that of country which is predominant. The patriot of this epoch fights no longer for his lineage, but for his land, not for his relations, but for the realm. He expresses in this the sentiment which actuates the nation, properly so called. Consanguine governments are tribal governments; with the birth of a genuine nationality, the family, the gens, the tribe, are all doomed to disappear, and with them the modifying influences they exerted on the race.

The intervening step between the tribe and the nation is usually said to be the federation, in which several tribes agree to forget their jealousies and unite in defense or offense. This condition is transitory, and I shall pass it by, in order to consider the direct influence of nationality on those elements of human nature which are the peculiar topics of anthropologic science.

The first object of nationality is unity, and this in the fullest sense of the term and in all the relations of national life.

Almost the very first of its aims is physical unity. A visible contrast between the inhabitants of different areas under one rule is suggestive to the legislator of a lack of harmony in other respects. The influence of a court, or of centralization generally, has ever been to disseminate throughout the realm one standard of physical beauty, as also one of costume and deportment; and this irrespective of how many discrepant varieties go to make up the body of the nation.

In this, as in all other respects, the chief efforts of the nation through its rulers are directed toward destroying those individual and tribal traits which forms of government based on consanguinity make it their chief end to cherish.

This contrast presents itself early. We find for instance that the native rulers of ancient Peru, the Incas, were accustomed, as soon as they had subjugated a new province, to deport large numbers of its

inhabitants to distant parts of their empire and supply their places with inhabitants of other tribes who had been long subject to their rule.

This plan of partial deportation and colonization was familiar to the Carthaginians, Romans, and other enterprising nations of the Mediterranean Basin, and explains to a large extent the constant blending of extreme physical types which the somatologist discovers in the remains from the oldest cemeteries around that great interior sea. We know by history and tradition that the "blond Libyans," the light-haired, blue-eyed natives of Northern Africa, tall and dolichocephalic, were transported in large numbers across the sea to the north, and settled among the smaller, swarthy, and brachycephalic tribes, whom we vaguely hear of under the names of Ligurians, Aquitanians, and Iberians.

Another physical lever which the nation, as distinct from the tribe, brings to bear on the physical traits of the species within its limit is its military organization. This is no longer classified by clans, or gentes, but is an army, with its soldiers drawn indiscriminately from all parts of its territory, and moving indifferently into all parts as occasion calls for. In earlier and more disturbed times, when social ethics were less regarded than to-day, the presence of large numbers of men cantoned and quartered upon the inhabitants, often exercising over them a brutal authority, led to constant commingling of race types and the gradual extinction of local peculiarities.

The influence which the nation as an anthropologic element exerts on language is one which demands our special attention. When it is rightly understood, much of that contest which has been going on for years between ethnographers, as to the worth or worthlessness of language as a guide in ethnography, will appear in a different light.

It is obvious that it would be consonant with the spirit of a gentile or consanguine society to preserve pertinaciously its own inherited speech, and to oppose any changes in it. But it is just as much in its spirit to desire to confine its own tongue to its own members and to look with jealousy on others than those of the true blood making use of it. Professional linguists in the American field are well acquainted with the prevailing unwillingness of the natives to give much information about their languages. They regard with suspicion and distrust inquirers into their own peculiar dialects; it is in the nature of a trespass upon private property. The federations of tribes never go so far as to attempt to establish linguistic or dialectic unity. Only incidentally and accidentally does one tongue partly encroach upon another one in this stage of society.

For this reason the linguistic classification in ethnography is a truly valuable one in all conditions of life where the consanguine rule prevails. The language is then a trustworthy guide of affiliation, both exclusively and inclusively, and the instances are extremely rare, if any indeed

exist, where one tribe had deliberately forced another to change its language as the condition of entering into an alliance.

The so-called "Empire of Anahuac," in Mexico, the organization of which had not wholly emerged from the consanguine condition, held as conquered and tributary many tribes of different speech, but had made no effort to impose upon any of them its own sonorous and beautiful language. On the other hand, Peru, which had reached a condition of national existence, exerted constant and strong pressure, as its historian, Garcilaso de la Vega, assures us, to crush and extirpate all other tongues throughout its domains than the Kechua, that spoken by the Incas and their congeners. It was declared to be the official language, and there was no hope for promotion for one not familiar with it. In this respect, those enlightened rulers of the Peruvian state displayed an insight into what constitutes the very strongest bond of national unity, which we here in the United States appreciate yet but imperfectly. It is within my own memory that the acts of assembly of my own State were issued in two languages, thus encouraging a long-existing linguistic discrepancy between the citizens of that commonwealth. Linguistic unity is the indispensable basis of national unity. When, as is the case with one of the present European empires, we hear of thirty-six different languages being current under one rule, we may be sure there is no real coherence in the nation.

The recognition of this fact, and the steady efforts directed toward the extermination of subordinate tongues and the substitution of a general or national one in their place, has led to the phenomenon of peoples of the same descent speaking different idioms, and those of alien origin expressing themselves through one and the same medium.

It remains true nevertheless—and this is an important point too often lost sight of in the discussion—that this substitution of one language for another never takes place without an extensive admixture of blood; for there is no more potent and prompt method of attacking the integrity of a language than by inter-marriage. Indeed, except in cases of slavery, we may almost establish the formula that the admixture of blood under such circumstances bears the fixed relation of one-half to one; that is, that when a language has superseded another, one-half of the marriages in the latter have been with members of the former. Of course, by marriages in this relation we mean continued sexual unions, not necessarily legal ceremonies.

Whatever the national form of government adopted, the principal maxims of jurisprudence and the ethical principles upon which they repose are profoundly modified by the substitution of the national in place of the tribal idea.

I will illustrate this contrast by an example familiar to the students of the early history of this country.

The European settlers in the colonies of Pennsylvania and New York could not understand why, when in time of peace an Indian murdered

a white man, they could obtain no redress from the tribal government with whom they had treaty relations. They regarded such indolence a breach of faith and proof of evil intention. It was nothing of the kind. A crime of blood was something which concerned the consanguine gens only; it was a family matter with which the tribal council had no concern and about which it could take no action; it was in no sense a crime against the commonwealth.

This view of the case was something wholly incomprehensible to the Europeans, who belonged to states where a felony or a breach of the peace is an attack on the community. In other words, ethnic jurisprudence is something quite different when the nation appears on the stage of history from what it is in the tribal condition.

This contrast runs through the whole of ethics. In a thoughtful article, published some years ago in the *Zeitschrift für Ethnologie*, Dr. Kulischer pointed out that in primitive conditions ethics presents a dualistic aspect: It demands the cultivation of kindness, protection, assistance, love, and peace to our friends, but quite as much does it prescribe hatred, enmity, robbery, murder, and deception toward our enemy. The nation breaks down the walls of narrow tribal animosities; it increases the number of those whose patriotic interests are in common, and thus widens the area of duty and the conceptions of ethics; but who dares say that our own conceptions of ethics are much beyond the primitive stage when still the greatest hero among us is the most skillful in murdering men—the most expert military commander?

Anything like a categorical imperative in ethics, a prescription of duty which should be the law of everyone toward all men would be out of the question in a society based on relationship or on narrow territorial considerations.

Nowhere does this ethical contrast become more apparent than in the relations of the one to the many, of the individual to the mass, a feature in ethnic jurisprudence admirably brought out in his recent masterly work on the subject by Dr. Albert Hermann Post.

In the tribal, totemic, or consanguine condition of government the individual is not regarded as an independent unit. The obligations he has to fulfill are those of his gens, and his actions are regarded, not as his own, but as those of a member of his gens.

If he robs or murders, the punishment falls, not on him personally, but on the gens; and if blood money or other compensation is demanded, it is not from him that it is required, but from the gens.

He in turn is liable for any crime his fellow-clansmen may commit; and in this vicarious expiation he sees nothing in conflict with the principles of abstract justice. He has not yet reached to the consciousness of himself as an individual. He accepts the obligations of his clan as his own, and is scarcely aware that he suffers any diminution because he can create no obligations himself otherwise than in his position as a representative of the clan or gens.

This is also true of his civil rights and those which refer to property. Wherever the consanguine theory is in force, the communal idea of property is also active. The land belongs in part or in whole to the kith and kin, in the nature of common land, or is sublet by the heads of the community on longer or shorter tenures. Personal property is so only in the sense that it belongs to the members of an immediate family or subgens, not to an individual, and in many instances passes in the female line.

It is obvious that in such a condition of society no idea of independent personal duty or individual morality could rise in the mind; and should any such enter through foreign instigation, it would be condemned as false, destructive, and treasonable.

Permit me to dwell on this point with some detail because of its prime importance. Those considerations which establish in a community its moral code, its ideal standard of what is right, of conscience, and of duty, pronounce the final sentence on the fate of that community. In all earlier conditions the preservation of the gens or tribe rested more on measures of destruction than of protection. Hence, toward the alien and the stranger justice and mercy were out of place and actually prohibited. Cæsar tells us of the ancient Germans, (and Nordenskjöld repeats the same of the modern Tchuktches of Siberia,) that they respected no law of honesty in dealing with strangers or those alien to their tribe. To cheat such in trade, to deceive and to plunder them, was actually meritorious.

In such communities the stranger has no rights, and can claim no protection as a fellow human being. He can only attain such through some rite of adoption into the tribe, or through some ceremony by which he can claim the privileges of hospitality—what German writers call the *Gastrecht*. The gens, the clan, the tribe, is an isolated unit, in natural antagonism to the race at large, and recognizes no sort of solidarity with its other members, nay, regards them as foes.

How different is all this in the developed system of the state? There the individual man is held accountable for his own actions. He is considered responsible for the deeds he commits and, therefore, feels that he is answerable to himself for the opinions and ethical theories which lie at the basis of his life and direct his conduct. For the first time in the history of the race he learns the meaning of *personality*, the highest lesson which advancing civilization can impress on humanity. He sees that by himself he must either stand or fall; that no vicarious expiation can meet the demands of what is eternally right; that his responsibility does not belong to another, nor can it be involved by the actions of another, but ever centers in his own thoughts and actions. Thus is he gradually emancipated from that condition of tutelage and hereditary bondage in which he was so long kept by the consanguine theory of government.

I can not too strongly impress upon you that this concept of person-

ality is a totally different condition from that of the isolated primitive man. We may imagine such an one, living alone with his one wife, his children around him, his household goods and gods all within his lonely lodge. That man's monogamy, his sense of property, his feelings of duty and responsibility, of association and independence, can in no way be assimilated to those of the man who is the free product of the state, developed through countless generations of gradual culture. To the scientific anthropologist the one is the complete contrast to the other; they have nothing in common but their external membership of the same species and a vague resemblance of external conditions.

The individual is indeed the true purpose of the state. Its aim distinctly is that he, or she, as an individual, shall be provided with, and protected in, the greatest possible amount of personal liberty; in this being in the utmost contrast to consanguine governments, where the individual is nothing, the tribe everything.

The value of personal liberty is as a means toward the acquisition of personal happiness, and hence we are willing to accept the definition of the modern idea of justice as advanced by the eminent French anthropologist, André Lefevre—that it is the respect for every interest which contributes to the highest general happiness of humanity; and we can not refuse to accept the definition of morality which Hovelacque and Hervé offer, as the only one which anthropologists can recognize; that it is the principle of organization for the purpose of satisfying the physical and intellectual needs of all men; a principle which they justly add, can only be carried out successfully by guaranteeing to the individual the highest degree of personal liberty in every direction, limited by no other barrier than the enjoyment of similar liberty by every other individual.

It is obvious on very slight reflection that the state as an element in anthropology has by no means worked out its full destiny in modifying the physical and psychical nature of man. As a form of government it is far from covering the whole of the earth's surface, and where it is nominally present it is still further in many instances from that perfected condition in which it has thrown aside the clogs and fetters of the consanguine system to which it succeeded.

Take the vast Empire of China for instance. It is ruled by a foreign dynasty on general principles of statecraft. But throughout all the really Chinese portions of the empire the details of the family system are retained with wonderful tenacity.

But we need not go so far for examples. Wherever we find a system of castes or of privileged classes, an hereditary nobility, or a state church, a transmissible community of property, whether real or personal, any inequality in the rights and responsibilities of sane adult individuals before the law, any concessions which relieve classes, or persons, or sects, or societies, or sexes of their full measure of liability, or confer upon them privileges or deny them rights enjoyed by others, there we

are in the presence of a form of government still clinging in these respects to the primitive theories of human society. The student of ethnological jurisprudence will class it to this extent with the totemic and gentile systems of the lower and earlier strata of human development.

Let me illustrate this by the relative position of woman in a tribe and in an enlightened State. I could not touch upon a weightier question to the somatologist, for none other so intimately relates to physical anthropology.

In spite of the matriarchal system, woman in all lower conditions of society is treated as inferior to man and is deprived of many rights which he enjoys. The exceptions to this are extremely rare, if any really exist. The cause of her inferiority is solely her less physical powers; it has ever been because she is bodily the weaker. The forms of marriage have made no difference. Whether a man could legally take to himself a multitude of wives, or whether, as in Thibet to-day, a woman could legally take a multitude of husbands; whether she was bought openly in the matrimonial market, or whether, as in this country, she could pick and choose at will from all her admirers; whether polygamy or monogamy prevails she has ever been treated as man's inferior, disallowed equal rights, prevented from equal liberty. So it remains to-day, though with some improvement.

At first she was but a slave and a beast of burden; at present, so far as the enjoyment of civic rights in modern states is concerned, she has risen to be classed among idiots and children. Surely we may hope that she has not yet attained the acme of her evolution.

A peculiar interest is attached to the development of this inquiry by the fact that it was originally an American contribution to our science. The first who clearly pointed out the distinction between gentile and political conditions of society, that is, between the tribe and the state, was the late Mr. Lewis H. Morgan; and, although we have been obliged materially to modify many of his opinions, to him belongs the credit of being the earliest to present in scientific form this important truth in anthropology. He did not perceive very clearly its bearings on physical anthropology, to which I have referred above, but he was fully awake to the potent agency of the state, as distinguished from the tribe, on the psychical nature of man. The following sentence from his chapter on the evolution of Greek culture will show this:

"That remarkable development of genius and intelligence which raised the Athenians to the highest eminence among the historical nations of mankind occurred after they had adopted democratic institutions, and these gave its inspiration."

By "democratic institutions" Mr. Morgan meant the substitution of a national for a tribal life.

But it would be an error to consider the state as we now know it, even in its best examples, as the final form which this element will

take in molding the body and the mind of man, his aspirations and his ethical instincts. Already there are evident signs that at no very distant future the human race will outgrow the limits of nationality and will demand and find some guiding principle which will break down the barriers which the nation, under present conditions, must perforce erect around itself; which will do away with the latent hostility which now requires the maintenance of enormous military establishments, and will successfully solve the problem of absolutely conserving the rights of the individual without impairing the efficiency of the organization.

It is easy to predict from what direction and under what impulses this desirable result will be brought about. Every year is making it clearer to the eye of the attentive observer; and never anywhere or at any time has there been in the history of humanity a grander example of its growth and potency than here, at this moment, we have spread before our admiring gaze. It is by means of international action, through associations and organizations formed for international purposes, that the highest and ultimate efficiency of government will be reached; and then it will be discovered to be one with anthropology, the science of man, the discovery of the laws which will lead him to the utmost symmetrical development of all his faculties, to his maximum efficiency, to his highest happiness.

SUMMARY OF PROGRESS IN ANTHROPOLOGY.

By Otis Tufton Mason.

GENERAL ANTHROPOLOGY.

Comprehensive works.—No great work appeared in 1893 in which a distinguished anthropologist summed up the results of his studies upon the whole subject of the natural history of man. The annual address of the president of the Anthropological Institute of Great Britain and Ireland brings together the work done by that society in an orderly manner, and a lecture bureau course of instruction was given by specialists through the United Kingdom under its auspices.

The Anthropological Society in Washington conducted successfully twelve Saturday lectures by distinguished specialists, covering the ground of the whole science. Dr. Brinton, in Philadelphia, also continued his comprehensive course. In most German universities there is some one professor who delivers an encyclopædic series of lectures on anthropology.

During the year the program of the École d'Anthropologie in Paris was as follows:

Medical geography. M. Bordier.
Anthropogeny and human embryology. M. Duval.
Ethnology. Georges Hervé.
Linguistics and ethnography. André Lefèvre.
History of civilizations. Ch. Letourneau.
Zoölogical anthropology. P. G. Mahoudeau.
Physiological anthropology. L. Manouvrier.
Comparative ethnography. A. de Mortillet.
Prehistoric anthropology. G. de Mortillet.
Geographic anthropology. Fr. Schrader.

These lectures are of the highest order, and are recognized by the minister of public instruction as of general utility.

In the New Standard Dictionary just issuing by Funk & Wagnalls, of New York, as much attention is paid to words in this department of knowledge as in any other. Cassell, Johnston, the old reliable dictionaries, in their new editions, at last recognize the importance of this science.

The classification of anthropology in the British Association's Notes and Queries into anthropography and ethnology takes the last-named term out of the realm of biological anthropology and places it at the head of all the functional sciences of man.

Societies.—The name of societies organized for the study of man alone is legion. Add to this the sections of academies and institutes of general science that have for their aim the study of whatever concerns man, and with this combine the work of other special societies that bear in some fashion upon this latest of sciences, and the general student becomes bewildered. These societies publish journals, bulletins, proceedings, memoirs, and even periodicals.

Not satisfied with home societies, students in every enlightened country combine in stated assemblies. Of these the chief are: International Congress of Anthropology and Prehistoric Archæology, held in 1893 in Moscow; Society of Americanists; Congress of Anthropology at the World's Columbian Exposition, and the German Society of Anthropology, held annually.

Furthermore, each national association for the advancement of science has a section of anthropology. To these belong Section H, American Association for the Advancement of Science; Section of Anthropology in the British Association; Section of Anthropology in the German Society of Naturalists and Physicians; Section of Anthropology in the French Association for the Advancement of Science. And, of especial interest, the colonies of Germany, France, and England have organized associations in the Orient based on those at home.

At the American Association for the Advancement of Science the chief contributions to anthropology were as follows: The Biloxi Indians of Louisiana, vice-presidential address by the Rev. J. Owen Dorsey, showing them to belong to the Siouan stock: The lecture of Dr. Brinton upon "Early man," assigning to the human race as its birth-place the mountainous zone extending from the western foot-slopes of the Alps through the Himalayas nearly to the borders of the Yellow Sea: The paper by Prof. W. H. Holmes on "Primal shaping arts;" the phenomena of the shaping arts are classified by materials, processes, function of the product, culture stage of the artist, by order of development, and by peoples or races.

The shaping art is set forth as follows:

1. Fracturing processes ..	*a.* Breaking. *b.* Splitting. *c.* Flaking. *d.* Chipping.
2. Battering processes ...	*a.* Bruising. *b.* Pecking.
3. Abrading processes	*a.* Grinding. *b.* Rubbing. *c.* Polishing.
4. Incising processes	*a.* Cutting. *b.* Scraping. *c.* Picking. *d.* Piercing or boring.

These processes and the order of evolution of the processes involved were shown in diagrams. The most excited discussion was with reference to the palæolithic problems. Other important communications were:

Navajo songs of sequence. Dr. W. Matthews, U. S. A.
Argillite quarries near Delaware River. H. C. Mercer.
Indian migrations. C. Staniland Wake.
Sense of taste among Indians. E. H. S. Baily.
Caches of the Saginaw Valley. H. I. Smith.
Is polysynthesis characteristic of American languages? I. N. B. Hewitt.
Psychology at the World's Fair. J. Jastrow.
Evidence of glacial man in America. G. F. Wright.
Antiquity of man in America. W. J. McGee.
Sheet copper designs, Hopewell group. W. K. Moorehead.
Mexican calendar system. D. G. Brinton.
Necropolis of Ancon, Peru. G. A. Dorsey.
Indian names of Four Winds. J. O. Dorsey.
Ceremony of the Quichua Indians. G. A. Dorsey.

The French Association met at Besançon. In the section of anthropology the following papers were of general scope:

Proportional weight of the cerebellum, the isthmus, and of the bulb. L. Manouvrier.
Prehistoric Algiers. P. Pallary.
Ancient and modern weapons of South American Indians. Felix Regnault.
The highest and the lowest natality in France; natality and masculinity; endogamy in rural districts. M. A. Dumont.
On the Ligurians. M. Ploix.

In June, 1893, the Societa Romana di Antropologia was organized in Rome, with one hundred founders. The society will devote itself to the science of man in all of its branches. Prof. Guiseppe Sergi, author of Principles and methods of classifying the human race, and Systematic catalogue of the varieties of man in Russia, was made president. Florence boasts still of the most efficient anthropological society in Italy.

At Moscow, during the first three weeks in August, the scientific people gave themselves to entertaining congresses, to wit: The International Congress of Anthropology and Prehistoric Archæology, eleventh session, and The International Congress of Zoology, second session. Even in the last-named, papers were read that were of interest to anthropologists, such as Psychophysical study on the memory of sensation, by N. Savélier, and study of the repartition of animals in vertical contours.

Before the Congress of Anthropology many communications of general interest were made.

Prehistoric researches in Spain. L. Siret.
The populations of the Caucasus. E. Chantre.
Changes in the problems before the Congress. R. Virchow.
Sculpture in France in the stone age. Baron A. de Baye.
Kourgans of the Kirghiz Steppes. Ph. Nevedov.
Oriental origin of the Cloissonnée jewelry and its introduction into the West by the Goths. Baron A. de Baye.

Anthropological types of Great Russia. N. Zograf.
Anthropometry on the living as practised in Russia. N. Zograf.
Influence of race and hygienic and social conditions on the physical development of man. E. Dementeer.
Anthropometry of Transcaucasian peoples (3 pls.). E. Chantre.
Temperament, from a psychologic and anthropologic point of view. N. Zéeland.
Two anthropological types of the family; a study in heredity (8 pls.). I. Orchansky.
The Mongoloids of Siberia, their actual condition and their aptitude for civilization. N. Iadrintsef.
The primitive inhabitants of the Mediterranean. G. Sergi.
Cannibalism and human sacifice among the ancestors of the eastern Fins. I. Smirnov.

The World's Fair Congress of Anthropology at Chicago was opened with an address by the president, Dr. Brinton, on "the nation as an element in anthropology."* Papers on physical anthropology were read by Franz Boas, Gerald M. West, and Manuel A. Muñiz; on ethnology communications were made by Dr. Brinton, Walter Hough, Miss Fletcher, Carl Lumholz, and O. T. Mason. Dr. Brinton affirmed that no good evidence exists of contact between America and Asia in pre-Columbian times, but this was denied by Prof. Mason. Miss Fletcher's essay on Omaha music was a defense of the opinion that the musical scales of civilization are found in savagery in an undeveloped state. Mr. Mason's paper was a résumé of American aboriginal tools, uses of natural power, metric apparatus, mechanics, engineering, and machinery.

In archæology, the leading paper was by Mrs. Zelia Nuttall on the Mexican calendar system, elaborately set forth in a series of charts.

Communications on folk-lore and religion were made by W. W. Newell, Franz Boas, J. Walter Fewkes, G. F. Kunz, Morris Jastrow, Mrs Sara Y. Stevenson, and Mrs. Matilda C. Stephenson.

One of the most instructive performances at the Congress was the explanation of exhibits and visits paid by invitation to the various parts of the grounds.

The Columbian Historical Exposition in Madrid was so far a success that there was brought together in the new national library and museum building the greatest collection of Americana ever under one roof. The Smithsonian Institution and many bureaus of the Government in Washington, the great museums of Philadelphia, New York, Boston, and Cambridge, and especially the Hemenway expedition, were well represented. Besides, all the Latin American States sent their treasures to complete the exhibition. Most of the valuable collections appeared again in Chicago.

Museums.—The museum idea was prominent in the minds and the publications of the World's Columbian Exposition during its entire progress. Prof. F. W. Putnam, who was appointed general manager of the department of anthropology, made most extended collections with this end in view. The result was most gratifying. Not only was

* This paper is printed in the present volume.

provision made for a museum at the new University of Chicago, but the citizens, led by Mr. Field with the munificent gift of $2,000 000, provided for a great museum in Jackson Park. To this will be attached a department of anthropology, including arts, physical anthropology, ethnology, and archæology. The material is greater than that upon which any other institution of the kind was ever founded. Other museums in the United States were greatly helped by the Exposition, the Peabody Museum in Cambridge, the Natural History Museum in New York, especially with the Emmons collection from southeast Alaska, the National Museum in Washington, and the collections in Philadelphia. There were also many private cabinets formed and enriched from the same source. It is fair to say that anthropology in America has never before had its activities so stimulated and increased.

The development of laboratories for anthropological study, research, and instruction is slow. Physical anthropological apparatus will be noted further on. But, there could scarcely be said to exist in the world prior to 1893 a single building or institution where the material had been set out to teach the whole history of mankind or the whole round of anthropological science. Therefore the assemblage of objects to illustrate anthropology toward which the eyes of students turned in 1893, was the World's Columbian Exposition. The material of the science manifested itself there in the following forms:

(1) Representatives of living races in native garb and activities.

(2) Things or objects connected with every phase of human life.

(3) Pictorial representations of apparatus of life in action and repose.

(4) Books and descriptive publications, throwing light on man and of his inventions.

These exhibits were under the following auspices:

(1) The exposition authorities, under the lead specially of Prof. F. W. Putnam, aided by Prof. Sargent, Dr. Franz Boas, Dr. C. S. Wake, Miss Alice Fletcher, Mrs. Zelia Nuttall, Mr. Stuart Culin, Mr. W. K. Moorehead, Dr. West, Mr. G. A. Dorsey, and a large corps of army and navy and civilian assistants who travelled especially over the countries involved in the Columbian period.

(2) The Government of the United States, in the Government building especially installed by the Smithsonian Institution through the National Museum, the Bureau of Ethnology, and other Departments.

(3) Foreign and home exhibitors, in the foreign government buildings, in the exhibits from abroad and from home through all the great public structures.

(4) Concessionaires in the Midway Plaisance and also in the bazaars everywhere throughout the grounds. Indeed, it would not be too much to say that the World's Columbian Exposition was one vast anthropological revelation. Not all mankind were there, but either in persons or pictures their representatives were.

Every technical, artistic, industrial thought that had ever entered human minds could be seen in their primitive or in their most eloquent expression. From the rude human habitations about the anthropological building to the results of co-operative architectural dreams which constituted the White City, was a long way on the road of evolution in the builder's art. The same would be true of the arts of dress, adornment, food, rest, transportation, manipulation, and manufacture, commerce and exchange, heating and illumination, mechanics and mechanical forces.

The forlorn savage woman depicted on the doorway of the Transportation building at one end of a series of weary burden bearers was in strange contrast with the spirituelle paintings of angels on the walls above her head. But this was only one of a series of transformations which made the Chicago Exposition the most imposing anthropological exhibit the world has ever seen. The financial panic that seized the world prevented many thousands of scholars from studying the exposition and put back the science of man quite as much as it did his material progress.

Professor Putnam's department of the Exposition included all subdivisions of anthropology. It embraced (1) the ethnographical exhibition of native American peoples living in their native habitations on the grounds; (2) a general ethnographic exhibit in the building; (3) an archæological exhibit in the building and casts of ruins in Yucatan shown outside; (4) exhibit of ancient religions, folk-lore, and games; (5) anthropological laboratories devoted to physical anthropology, criminal anthropology, psychology, and neurology with apparatus and diagrams; (6) an anthropological library in all branches of the science.

The anthropological exhibit of the Government was devoted (1) especially to showing the relation of the material activities of North America to the linguistic classification that had been recently completed; (2) to the exposition of the recent explorations made by Prof. William H. Holmes in quarry sites of the aborigines in various portions of the Union. This was done in a most creditable manner; (3) a synoptical view of the early history of mankind from the earliest stone age to the first iron age, set out by Professor Thomas Wilson.

Of great public interest among the foreign exhibits were the armor in the German village, the gold work from Colombia, the Turkish and the Cairene bazaar, the Java village, the Samoan village, the Dahomey village, the Japanese and the Hindoo bazaars. Indeed, only an extended catalogue will reveal the riches of the material.

Current literature.—Very frequent inquiries are made by those who wish to look up some special question or to begin some new study in anthropology. It is no longer possible to prepare for this summary a creditable bibliography in the space assigned; but it is also not necessary. Students who have access to the following publications

do not need any further help in following up the literature of the science:

(1) *The American Anthropologist*, Washington; quarterly; Judd & Detweiler. Extended bibliography on all studies relating to man.

(2) *The Index Medicus* and the *Index Catalogue* of the Surgeon-General's Office, Washington, especially thorough in anthropo-biology.

(3) The catalogues of the Literary Bureau, Boston.

(4) *Archiv für Anthropologie*, Braunschweig; quarterly. Most exhaustive lists, with short digests of books and papers.

(5) *Mittheilungen der Anthropologischen Gesellschaft in Wien.* Full bibliographies.

(6) Annuaire des Journaux, etc., Paris, 1892.

Mr. G. W. Bloxam has placed anthropologists under lasting obligations to him by his printing a complete index to the publications of the Anthropological Institute of Great Britain and Ireland (1843–1891). This includes also the journal and transactions of the Ethnological Society of London (1843–1871), the journal and memoirs of the Anthropological Society of London (1863–1871), the Anthropological Review, and the journal of the Anthropological Institute (1871–1891).

General literature.—The literature of the world has become impregnated with anthropology. *Science*, *The American Naturalist*, and especially *The Popular Science Monthly*, in America, give a large share of their pages to this topic. *Nature*, *The Academy*, *The Athenæum*, and all the great quarterlies of London; *Revue Scientifique* in Paris; *Globus* and a host of other journals in Germany, are common carriers of the best kind which send weekly, monthly, and quarterly cargoes of information to intelligent readers.

The gallery of anthropology is still in the future. At the World's Columbian Exposition, as mentioned, groups of lower races in costume were well set up, and photography was efficient in putting life into accounts of peoples inaccessible to the most of us. Gabriel de Mortillet has advocated the extension of the work of the camera, and im Thurn makes a good argument for its use in South America.

There is no good guide to anthropological studies published in America. The reprint of the *British Notes and Queries* was a timely piece of work by the British association.

ANTHROPO-BIOLOGY.

The sources of information concerning the biology of man are, first of all, the organs of the anthropological societies. In Germany and France far more attention is paid to craniology, measurement of the other parts of the body, the teeth, comparative anatomy of man and the lower animals, and greater stress is laid upon the importance of these studies. In England and the United States craniological measurements are discounted. All the literature of this branch of the science may be sought in the bibliographies of Surgeon-General's

Index-Catalogue and the *Index-Medicus*, Washington; the *American Anthropologist*, Washington; *Archiv für Anthropologie*, Braunschweig; *Mittheilungen der Anthropologischen Gesellschaft in Wein.*

Dr. Brinton, in *Science* (February 24), enters a vigorous protest against the multiplication of jaw-breaking compounds of Greek roots to represent different cranial measurements and indexes.

Craniologists have differed in opinion concerning the orientation of the skull for the purposes of measurement. All agree that it should be set as in life where the owner is looking straight ahead. To set up the skull after death in the position of the living head gazing at the horizon is the problem. Dr. Eugene Hirtz to this end has utilized the cadaver as an intermediary between the living and the skeleton, since the eye remains fixed in its orbit after death. The paresis of the muscular system is then complete—the eyes are immobile. The problem is to compare the visual axis of the cadaver with the plane of the cranium as used by the experimenter and with the gaze of the living fixed on the horizon. The conclusion is that the "orbital axis" of Broca is nearly parallel to the plane of the visual axes, or the so-called horizontal plane of the living. (*Bull. Soc. d'Anthrop. de Paris*, 4 s., IV, 386–389.)

Dr. Manouvrier, who has devoted years to the study of the long bones of the human body, communicated to the Paris Anthropological Society a memoir on the morphological variations of the body of the femur in the human species. The conclusion reached is that platycnemy, retroversion of the head of the tibia, and platymetry, seen in prehistoric remains, in savages, and among modern Europeans, do not represent anatomical survivals through atavism, but are all derived through physiological causes, allied to the kind of life and different external conditions susceptible of exaggeration or modification. (*Bull. Soc. d'Anthrop. de Paris*, 4 s., IV, 111–144.)

MM. Azoulay and Regnault have made a comparison in the comparative form of the incisors of apes and the various races of men. In the apes the outer enameled surface is wide and shaped like a hoe, of the uncivilized races the edges are more nearly parallel, and in the civilized races they are quite so. Measures were taken of the length of the free border and of the side of the enamel and the difference noted. The order of succession, as regards the elongation and rectangular form of the enamel, is: apes (chimpanzee and gorilla), negroes, New Caledonians, Australians, Polynesians, Javanese, Annamites and Chinese, Europeans, Indians, Bengalese. (*Bull. Soc. d'Anthrop. de Paris*, 4s., IV, 267–269.)

Prof. Cope some years since affirmed that the tubercular forms usual in the cusps of human molars point to a reversion to the lemurian dentition. In *Anatomischer Anzeiger* (No. 24, 1892), Dr. H. F. Osborn, of Columbia College, presents the result of his own researches, with a summary of other work, since Cope. The primitive mammalian molar is a single cone, to which other cusps have been added, as

many as six appearing in some primates. The human molar, therefore, is a reversion to the lemurine type. Brinton affirms that the study of these traits in racial anatomy has no definite result.

Two essays in the *Contemporary Review*, by Mr. Herbert Spencer, on the insufficiency of "natural selection," were the occasion of many papers by anthropologists representing a variety of points of view. Notable among these should be read Cattell on Survival of the Fittest and Sensation Areas.

Prof. Hartmann published the second part of his second volume on the anthropological material in the Royal University at Berlin (*Appendix to Arch. f. Anthrop.*, XXII, pt. 3). The classes treated are: Old Egyptian skulls; Guanches, of Teneriffe; Nigritians; modern Egyptians; Bantu, Kaffirs and Bechuana; Khoi-Khoi, or Hottentots; San, or Bushmen; Germans from the interior of Austria; Sloven; Finns.

Upon the question of the color-sense among aborigines the experiments of Blake and Franklin among American Indians are valuable. It has been frequently affirmed that Indians do not know colors by name, but Gatschet's researches contradict this. At Haskel Institute four hundred and eighteen Indians of different tribes were tested, and only three cases of color blindness found to exist—two for red and one for green. These were males and all full blooded. This ratio of seven-tenths of 1 per cent as compared with 5·36 per cent in Switzerland and 4·12 in Germany would seem to argue the diminution of the faculty of color in civilization. (*Science*, New York, June 2.) Dr. J. Ambialet has studied with great care the artificial deformation of the head called Toulousian and published his results in *L'anthropologie* (Paris, IV, 11–27.) The paper is illustrated with many cuts, which add greatly to the clearness of the text. The people of Toulouse bandage the heads of their babies, and that compels the brain to grow out in other lines. These Toulousians are naturally short-headed, but by the effects of the constrictions mentioned they come to be dolichocephalic or long-headed and the skulls to be elongated, oval, pitched up at the occiput, trapezoidal, bilobic, etc.

The disastrous decrease of population in France has given rise to a national association termed "Congrès de la repopulation de la France." This society held its session the current year in Paris, under the presidency of Dr. Gustav Lagneau. Questions discussed were, assistance to poor children; protection to women with child; modifications of fiscal laws looking to increase of population; change of laws respecting illegitimates, etc. Resolutions denouncing war and advocating disarmament were passed.

The Marquis de Nadaillac has published a short paper (*Science*, January 27) on the extremes of heat and cold endured by man. The following records in centigrade are quoted:—

English and Russian officers, Maruchak, Afghanistan, —20° C.
Prince Henry, Central Asia, —40° C.

Captain Back, Fort Reliance, Canada, —56° C.
Captain Dawson, Fort Rae, —67° C.
Abbe Petitot, Fort Good Hope, —35° to 42° C.
M. Martin, E. Siberia, —63° C.
Gen. Greely, Discovery Bay, —66° F.
Gilder, Northeast Canada, —71° C.
Buveyvier, Tuare Country, +68° C.

A difference of nearly 250° F.

PHYSIOLOGICAL PSYCHOLOGY.

In the International Congress of Experimental Psychology, of 1892, reported in *Mind*, 1893, II, 42–53, is printed a paper by Prof. A. Bain, on the respective spheres and mutual helps of introspection and psychophysical experiment in psychology. The author still holds that introspection, or the self-consciousness of each individual working apart must still remain at the head of the resources for imparting to psychology a scientific character. A few of the researches where both methods are applicable are:

(1) The muscular mechanism, the primary instrument of our activities for all purposes whatever.

(2) The theory of the intellect as expressed by such terms as memory, retentiveness, association, reproduction, and the like.

(3) The momentary fluctuations of ideas in and out of consciousness. Many phrases have come into use in connection with it, such as "threshold" of consciousness, recency of impressions, area of consciousness, lapses of attention, etc.

(4) The determination of the condition of permanent association or enduring memory, as against temporary or so-called "cram."

Among the great issues now awaiting solution Prof. Bain places in the foreground plurality of simultaneous impressions in every one of the senses. Attached to it is the question of the operative power of impressions while momentarily standing aside from the conscious area. For these problems introspection needs to be helped out by experimentation, while the delicacy of tact in the self-conscious observer is also of the utmost importance. One of the most pregnant issues in the whole field of psychology is the swaying of the will by motives outside of pleasure and pain, otherwise called the "fixed idea."

Until there is a more general agreement than at present on the analysis of the fundamentals of the intellect, it is premature to recommend a searching investigation into the working of similarity in diversity, on which hangs the inventive powers of the mind, just as much as simple memory reposes the adhesion of conjunctions in time. For the present there is abundant scope for introspection in roaming over the accessible facts of psychical life. By the nature of the case the initiative in the more fruitful inquiries will be most frequently taken by introspection, which also by its powers of analysis will still open the path to the highest generalities of our science.

Prof. Sully published an appeal to parents relative to studying the child-mind, of which the following is a brief:

1. *Attention and observation.*—Early attention and interest (in looking, touching, etc.) and gradually widening observation. Exact as well as hasty observation.

2. *Memory.*—Earliest recognition of persons. What is remembered best. Out-of-the-way facts, insignificant details, etc. Strength of verbal memory, new words introduced into a familiar story, and the like.

3. *Imagination and fancy.*—Anthropomorphic fancy, child-myth, personifications of nature. How the unknown in space and time is filled. Child-lies. Imagination interfering with observation and producing "illusions of sense."

4. *Reasoning.*—First curiosity about the origin of things, himself, of the Deity, etc. Childish puzzles, things that seem strange and inspire thinking. Childish explanation. How it translates our explanations of things, puts its meaning into our words.

5. First use of articulate sounds, characteristic omissions, alterations and transpositions of sounds in repeating words. Order of acquiring sounds. Invention of new word-sounds. Original applications of common words.

6. *Pleasure and pain.*—First manifestation of pleasure and displeasure (smiling, frowning, etc.). Instinctive and acquired likes and dislikes. Favorite amusements.

7. *Fear.*—First manifestation of fear—of the dark, of animals, of big moving things. Are they due to instinct or to experience or suggestion?

8. *Self-feeling.*—Self-pity, self-caressing, vanity, jealousy, property in toys, etc.

9. *Sympathy, affection.*—Early feelings toward animals and human beings as bearing on the question of innate sympathy. Cruelty of children.

10. *Artistic taste.*—Special preferences for colors, forms, rhythms, melodies, etc. Ideas of prettiness, grandeur, etc. First signs of laughter, or of a sense of the comical or ludicrous.

11. *Moral and religious feeling.*—Earliest signs of respect for authority. First exercise of judicial function by the child in scolding or commanding others or himself. First conception of right and wrong. Illustrations of feelings of justice in little children, of moral sensibility and of callousness.

12. *Volition.*—Imitation of others in words, gestures, etc. Effect of other's verbal suggestion on childish action. Examples of self-will, of defiance of commands. Hesitation in acting and self-restraint.

13. *Artistic productions.*—Spontaneous dramatic invention (make-believe) in play. Original manual construction (building, etc.). Invention of stories. First drawing of animals, men, etc. (Preserve examples.) Noticeable grades of progress in these.

Prof. Scripture contributes sound advice to those who would take graduate instruction in psychology (*Science*, New York, July 28). The student must begin with knowing the methods of making experiments; this should be followed by careful work in the theory of measurements, treating of the probability integral, the mean variation, etc. One of the great differences between psychological and physical measurements is that the conditions can not be controlled as in physics; mean variations are thus greater and the deductions from the results not the same. Psychological experiments resemble those taken once on each of a number of persons. The study of the methods of statistics has also to be made for the sake of mental statistics. The making of measurements brings in the study of fundamental and derived units and the construction of apparatus. The subject's touch, sight, hearing, etc., require a knowledge of the physical processes used in stimulation.

Hearing lectures will never make a psychologist; the fundamental course for all special instruction is the laboratory work. The student must be trained by repeated exercises in making the measurements explained in the lectures, including exercises on touch, temperature, hearing, sight, in the graphic method, chronometry, dynamometry, audiometry, photometry, colorimetry, etc. This should be followed by work in the construction of apparatus, elements of mechanical drawing, use of tools.

Journals specially devoted to psychic studies are:

The American Journal of Psychology. Worcester, Mass., Vol. V in 1893.
The Philosophical Review. Vol. I, in 1893.
Révue des Sciences Psychologiques. Paris. Vol. IV.
Journal of Morphology. Vol. VIII in 1893–'94.
Revue Philosophique. 18me année in 1893.
Zeitschrift für Psychologie und Physiologie der Sinnesorgane. Bd. V in 1893.
Vierteljahrsschrift für wissenschaftliche Philosophie. Bd. XVII in 1893.
Philosophische Monatshefte. Bd. XXVIII in 1893.
Zeitschrift für Philosophie und Philosophische Kritik. Bd. CII in 1893.
Philosophische Studien. Vol. IX in 1893.
Mind. A quarterly Review. London, n. s. Vol. II in 1893.
Revue internationale de Sociologie. Vol. I in 1893.
Rivista internazionale di Scienze sociale e Discipline ausiliare. Vol. I in 1893.
Philosophisches Jahrbuch. Bd. V in 1893.
Rivista Italiana di Filosofia. Anno VIII in 1893.
Brain. London. Parts 61 and 62 in 1893.
Proceedings of the Society for Psychical Research. Vol. IX in 1893; also Journal.
Revue de Métaphysique et de la Morale. Première année in 1893.

THE RACES OF MEN.

In the United States the chief sources of publication on ethnological topics are: The reports and papers of the Peabody Museum, in Cambridge; the journals of the Hemenway Southwestern Expedition; the transactions of the American Philosophical Society; but, most extended of all, the reports and bulletins of the Bureau of Ethnology, and the publications of the Smithsonian Institution and of the National Museum.

Abroad the study is stimulated in a multitude of ways. The Anthropological Institute of Great Britain and Ireland is specially strong in this line of study through its colonial attachments. Besides this society, the Colonial Museum, the British Museum, the Royal Asiatic Society, flood the world with good literature, especially concerning the Eastern Hemisphere. Branches of these great societies are established in Bombay, Calcutta, Hongkong, Shanghai, Sydney, Wellington, publishing also literature on ethnology.

Interest in the study of ethnology is kept alive in France partly by bringing to the city of Paris families and groups of colonial natives. In the Palais des Arts liberaux, Champs de Mars, was opened in 1893 an exposition of colonial African ethnology. Besides one hundred and thirty Dahomoans, representatives of the Ogowé, Whydah, Godomé,

Cotonou, Porto Novo, Allada, Savi, and Abomey peoples, were exhibited in native dress and habitations, working at their national trades. The chief source of information is *L'Anthropologie*, Paris, in which excellent reviews of the literature of the subject will be found.

Every German city has an ethnographic museum. In Berlin, Dr. Bastian, with a competent force, has charge of the great Museum für Völkerkunde and in Dresden Dr. A. B. Meyer has his home. The *Zeitschrift für Ethnologie*, Berlin, is a kind of diary or merchant's blotter, giving information concerning ethnological material as it comes to hand, to be journalized and posted up later on. The publications of the Dresden Museum on the Melanesian islanders are works of great merit.

In Holland the *Internationales Archiv für Ethnologie* is published at great expense by J. D. E. Schmelz, with colored lithographic plates. The work of Italian ethnologists must not be overlooked, especially in Central Africa. The *Archivio per l' Antropologia di Firenze*, organ of the Società di Antropologia, is the medium of publication.

Interest in the study of Etruscan origins still continues. Apropos of Dr. Brinton's suggestion that this people are to be classed with the Libyans, Prof. Giuseppe Sergi, of Rome, announces in *Nuova Antologia*, September, 1893, that from the side of physical anthropology this is true. In this connection should be read Dr. Kleinschmidt's reference of the Etruscans to the Aryan stock, nearest to Lithuanian and Lettish and Gaetano Polari's comparison of the same language with the Basque.

Dr. Zograf has studied the people of Great and Little Russia. They are not homogeneous, but result from the mixing of Slavo-Lithuanians and Uralo-Altaic elements. The people of Little Russia differ slightly from province to province in costume and manners. The region of the steppes which extend between the Carpathian and the Don has been peopled by colonies from diverse sources, by Great and Little Russians, Bulgarians, Servians, Moldavians, and Germans. The Nogais Tartars are cantoned in the Crimea. (*L'Anthropologie*, Paris, IV, 228.)

Dr. Braislin has studied the human nasal canal as an ethnological characteristic with reference to the viability of the white and negro race in the same area. He thinks that the wider, shorter, and shallower canals in the negroes account for their being more subject to pulmonary diseases and that they present characteristics specially adapted for preparing the inspired air of a tropical climate for reception into the lung structures. (*Science*, New York, March 31.)

Dr. Felix von Luschan, of Berlin, finds in the modern Jews, descendants of three different races, the Hittites, the Aryan Amorites, and the Semitic nomads, who immigrated into Syria about the time of Abraham. (*Science*, New York, January 12.)

The Veddahs of Ceylon were the subject of an exhaustive study by the brothers Sarasin. The census of the island gives 2,760,000 persons.

Singhalese (+Rodyias, 2,000)	1,847,000
Tamils (430,000 sedentary)	687,000

Indo-Arab (Moormen, 168,000)	187,000
Eurasians	18,000
Malays	9,000
Afghans, Arabs, Bengalese	7,000
Europeans	5,000
Veddahs (males, 1,177; females, 1,051)	2,228

An excellent review of this work is in *Archiv f. Anthropologie* (XXII, 316–327).

The Khmers, of Cambodia, have been studied by Dr. Maurel, and the results of his investigations are made known in one of the *Mémoires de la Société d'Anthropologie de Paris.* They are the easternmost branch of the Aryan stock arriving from India with their native culture and have become mixed with various other strains.

The publishers of *L'Anthropologie* have brought together the papers of Dr. Eitel upon the Hak-ka (Paris, IV, 129–181), the general title of the Chinese inhabiting the province of Canton. These people have spread themselves throughout Indo-China. With diverse elements that are mutually antagonistic, they seem to be bound together by a common interest. The population of Canton is as mixed as was that of England after the Norman conquest. The Miao-tse aborigines have been corralled in the mountainous districts to the northwest by a migrating people, who came to occupy the entire province and who entitled themselves the Aborigines (Pun-ti). Later, these had to defend themselves successively against two other invaders of different race. These last are the Hak-ka and the Tchao-Tcheow or Hok-lo. The last named prefer the water and the Hak-ka the land. Both peoples came from the northwest, one following the waters, the other the mountains. The monograph of Dr. Eitel is devoted to the Hak-ka, their ethnography and history.

Dr. Michaut has published a work on the Aïnos. As was often pointed out, these people are neither Mongol nor Japanese, but approach astonishingly the Russian Moujik and are probably an aberrant branch of the white race. They are remarkably pure in blood, and may foreshadow the coming of the Russian to the Pacific coast to claim their own. The language is absolutely special, but approaches the Mantchoo in phrase and syntax. (*Bull. Soc. d'Anthrop. de Paris*, 4. s., IV, 259–263.)

The greatest interest now centers in the ethnology of northeastern Asia outside the question of the identity of the present peoples with those of America. The Kamchatkans, Ghiliaks, Koriaks, Yukaghirs, and others are supposed to be the remnants of the aborigines of northern Asia and even of the Japanese Isles. The studies of Schlegel in Chinese, of Morse in the shell heaps of Japan are thought to be confirmatory of this. The arts of these small people agree in many respects with those of the Hyperborean Americans.

New light is thrown upon the African pigmies by the researches of Stuhlmann, an associate of Emin Bey. In stature they average 1·25

meters. They are very prognathic and brachycephalic and the color is brown or reddish yellow rather than black. Stuhlmann looks upon the pigmies as relics of a peculiar variety of our species that once extended over Africa and parts of Asia. Dr. Brinton however, in a lecture before the Washington Anthropological Society affirmed that the size of these people had been brought about through degeneration.

Mr. G. F. Scott Elliot, at the end of his notes on native West African customs, has the good judgment to give a catalogue of the tribes on the upper Zambesi, with names, geographical locations, and definite position by latitude and longitude. (*J. Anthrop. Inst.*, XXIII, 85.)

Dr. Karl Sapper publishes in *Petermann's Mittheilungen* a short account of the ethnography of Guatemala. The languages at present spoken or formerly used are:

1. The Pipil of Salamá.
2. The Pipil of Comapa.
3. The Pupulca.
4. The Carib.
5. Sinca.
6. The language of Yupiltepec.
7. The Maya.
8. Language of the Chujes.
9. The Chorti.
10. Mame or Mam.
11. Aguacatec.
12. Jacalteca.
13. Ixil.
14. Quiché.
15. Cakchiquel.
16. Jutuhil.
17. Uspanteca.
18. Pokomam.
19. Pokomchi.
20. Kekchi.

The second part of the paper relates to culture, and especial attention is given to the varieties of habitations,* and an excellent map accompanies, showing in color the location and spread of each language.

The Tierra del Fuegians received more than their share of attention in a monograph published in the *Archiv für Anthropologie* (Braunschweig, XXII, 155–218, figs. and tables). These islanders are given under three stocks.

(1) Ona (Wua; Jacana-Kunny of Fitzroy; Aonik of Brinton) in the east.

(2) Jahgan (Jagan or Japoos or Tekenika of Fitz Roy) in the south.

(3) Alakaluf (Alekoolip) in the southwest.

In every kind of cranial measurement these peoples are compared with one another and with the rest of mankind. The author comes to the long deferred conclusion that the Fuegians resemble Europeans most and came from that continent.

The Polynesian Society of Wellington, New Zealand, takes up the problem of the Oceanic races with great vigor, publishing a quarterly journal. Necessarily the great majority of papers are in the graphic rather than in the logic stage, as should be. Papers of general value are: On Savage Island, E. Tregear and J. M. Ossmond; Asiatic origin of Oceanic numerals, E. Best; Asiatic gods in the Pacific, E. Tregear; Relationship of Malayan languages, T. L. Stevens, and many communications on the Maories.

---

* *Peterm. Mittheil.*, Gotha, 1893, XXXIX, 1–14.

The Solomon islanders are in the midst of a series of archipelagoes whose population is often called melanoid or negroid. The studies of Hagen lead to the conclusion that there is not here an unique type (*L'Anthropologie*, Paris, IV, 215). Emigrants from the west, Malays and Polynesians, or Malayo-Polynesians, according to the linguists, have continually arrived there, following the currents and the winds, and have profoundly modified the older elements, creating really a Melano-Polynesian type.

GLOSSOLOGY.

In the *American Anthropologist* (VI, 381–407) Messrs. Hewitt and Dorsey attack Duponceau's theory of polysynthesis in the Indian languages. Mr. Hewitt is a learned Iroquois, and Dr. Dorsey is as familiar with Siouan languages as with his own. The former says: "The materials of the language of the Iroquois consists of notional words—nouns, verbs, adjectives; representative words—prefixive and independent pronouns; relational words—adverbs, conjunctions, and suffixive prepositions; and derivative elements, formatives and flexions." The distinctive nature and characteristic functions of these elements can not be changed at will by any speaker. In the category of notional words noun stems may not indifferently assume the functions of verb stems or adjective stems. The compound stems of word sentences may become parts of speech when the linguistic sense has come to regard the separate meanings of the elements thus combined. This is *parasynthesis*. In the Iroquoian speech all the developments of the language expressed by the terms, word-sentence, stem-formation, and inflection are based primarily on the well-known principle of juxtaposition and a more or less intimate fusion of elements, but the living and traditional usage of the language has established the following morphothetic canons:

(1) The simple or compound stem of a notional word or of a word-sentence may not be employed isolatedly without a prefixed simple or complex personal pronoun or a gender sign or flexion.

(2) Only two notional stems may be combined in the same word-sentence, and they must be of the same part of speech.

(3) The stem of a verb or adjective may be combined with the stem of a noun, and the stem of the verb or adjective must be placed after and never before the noun stem.

(4) An adjective stem may not be combined with a verb stem, but it may unite with the formative auxiliary thă', to *cause* or *make*, and with the inchoative ç.

(5) A qualificative or other word or element may not be interposed between the two combined stems of notional words, nor between the simple or compound notional stem and its simple or complex pronominal prefix, derivative and formative change being effected only by prefixing

or suffixing suitable flexions and formatives to the forms fixed by the foregoing canons.

Dr. Washington Matthews, reviewing the new edition of the *Riggs Dakota dictionary*, published by the Smithsonian Institution as Vol. IV of Contributions to Knowledge, pays a just tribute to the original work and its author. Great and worthy praise is bestowed upon the Rev. J. Owen Dorsey for the editorial supervision of the new volume, and the reviewer says that the improvements are largely dialectic. This shows how thoroughly the pioneer members of the Dakota mission did their scholarly work (*Am. Anthrop.*, Wash., VI, 96).

The question of the phoneticism of the Maya is reviewed by Cyrus Thomas in the *American Anthropologist* (Washington, VI, 241–270), who says that their ideographic character is maintained by Förstemann, Schellhas, Seler, and Valentini; their phonetic character by Charency, de Rosny, and Thomas, and an intermediate ground is assumed by Brinton, who gives to them the name ikonomatic.

A substantial contribution to the extension of ethnology through linguistics has been made by Rev. J. Owen Dorsey in a paper before the Madison meeting of the American Association proving that the Biloxis, a tribe on the southern border of Louisiana, belong to the Siouan or Dakotan linguistic stock. This family is now traced along the western side of the Mississippi River from the gulf to its source, throughout the entire drainage of the Missouri and the Arkansas and along the eastern slopes of the Appalachians from Washington city to central South Carolina.

Upon the study of American native languages abroad, Dr. Brinton draws attention to a report on American linguistics made at a conference in Madrid by Don Francisco de Fernandez y Gonzalez and printed by the Athenæum. In the *Anales de la Universidad*, of Santiago, Chile, is a paper entitled, "La linguística Americana, su historia y su estado actual," by Diego Barros Arana and Rodolfo Lenz.

A valuable addition to the resources of Mexican archæology is Dr. Seler's publication with textual explanation of Humboldt's collection of maguey paintings. In the city of Mexico, in 1803, Humboldt purchased sixteen hieroglyphic paintings collected by Boturini Benaducci, 1740, confiscated by the Government and placed in the hand of Leon da Gama to study. In 1806 these paintings were presented to the Berlin Royal Library and there they remained until in 1888, they were exhibited to the Congress of Americanists. Photographic facsimiles were published by the Royal Library as a gift to the Columbus Centennial.

But the remainder of Boturini's collections were scattered and lost sight of nearly a hundred years, until M. Aubin, 1830–1840, with assiduous care gathered them and took them to Paris. Fifty years longer they were kept with miserly circumspection from inquisitive eyes until M. Eugene Goupil bought them and placed them in the hands of M. Boban to catalogue. Already a volume has appeared entitled,

Documents pour servir a l'Histoire du Mexique, published by Leroux. Dr. Brinton furnishes in *Science* (March 10) a good account of the material, and says that all that has been previously written about Mexico has no more importance than the histories of Egypt, composed before the decipherment of the hieroglyphics.

In *Science* Dr. Cresson shows the method pursued by him in his attempt to analyze the Maya hieratic and demotic script by the phonetic elements of which it is composed. The Maya graphic system seems to be based upon a primitive ideographism, the elements derived from natural and artificial motives. These symbols received phonetic meanings. This representation of ideas or words by pictures, whole or abbreviated, Dr. Brinton calls the iconomatic stage of writing. Both Mexican and Maya were of this character. The Maya especially had gotten beyond it toward the higher stage. (*Science*, New York, December 15.)

Canon Isaac Taylor, reviewing a paper of von der Gabelentz on the probable connection between Basque and Berber speech, says: "We may adhere to the old conclusion that in the more essential points the affinities of the Basque are with the languages of the Ural-Altaic class, which are totally different from the Berber languages, which belong rather to the Hamitic fam ily. (*Acad.*, 1893, July 29.)

Since the appearance of Horatio Hale's paper on the possibility of inventing language, much has been written on child language. Clark University, at Worcester, has taken up the matter seriously of making a collection of the secret languages of children, of which the old time "hog Latin" is only one example.

TECHNOLOGY.

The divisions of primitive technology, out of which all useful human enterprises spring, are the following:

(1) The study of materials, their qualities and geographical distribution.

(2) The study of the forces of nature, power of man, beast, wind, water, elasticity of rigid substances and gases, electricity,—as they have been subdued and put to work by man.

(3) Tools, utensils, apparatus, the study of their working parts, their manual and operative parts, their attachments and consequent machines.

(4) Mechanics, the gradual working out of the inclined plane, lever roller, wheel and axle, pully, screw, and the like, for the conversion of time, direction of motion, resistance, one into another.

(5) The processes of work, the manner in which the operations of an industry have been carried on from beginning to end.

(6) The products of the arts in their designs, structures, functions, and influence on the whole body of human industry.

The round through which all these activities go is:

(1) Exploitation of the earth for raw material in its three kingdoms; and in the case of plants and animals, increasing the supply through domestication and cultivation.

(2) The application of tools and power to these substances so as to convert them into forms to gratify human desire or to meet human needs.

(3) The transfer of the material in any stage of its manipulation from place to place, on men, beasts, wagons, ships or trains, called transportation and travel.

(4) The buying and selling of commodities involving weighing, measuring, and valuing, or weights, measures, and money, the development of the middle man, the wholesale merchant, the retail merchant, the broker, the banker, etc.

(5) The consumption of the ultimate product and all the utensils and customs involved therein.

Each one of these operations in its historic elaboration involves the growth of the areas involved from the smallest territory occupied by a self-supporting tribe to the occupation of the entire earth as a single-culture area. It also includes the differentiation of labor among men, giving to every man a greater diversity of thought and action in each operation, and requiring at the same time the cooperation of a greater number of men as specialists to accomplish the same kind of work. To unfold all arts of all peoples in all time and gather them into a single system of technic life is the purpose of technologic science.

The effect of the earth on arts is *techno-geography;* the effect of races on arts is ethno-technography, and from each point of view that gives a different motive to studying man, the arts of life are classified on different concepts.

Nowadays every trade has its journal, and the publishers never lose an opportunity to explain and illustrate the evolution of their craft. The *Journal of the Society of Arts*, London, is the first publication to consult upon this topic.

Mr. E. H. Man gives an account of the technique of the Nicobar pottery (*J. Anthrop. Inst.*, XXIII, 21–27). The manufacture is confined to one small island named Chorora, and the entire work of preparing the clay and molding and firing the pots has to devolve on the women of the community. It is related that a Chorora woman, while visiting another island, attempted to make a cooking pot, but she paid the penalty with her life. Clay at Chorora having been exhausted, material must be had from other islands, demanding a sea trip of a few miles. The duty of procuring the clay and the sale of the finished articles devolves on the men. (Compare Holmes and Cushing, 6 An. Rep. Bur. Ethnol.)

Having prepared a quantity of clay by freeing it from small stones and other extraneous matter, and having kneaded it with fine sand until of a proper consistency, the operator seated herself on the ground and placed before her a piece of board on which she laid a ring or hoop

about 8 inches in diameter made of cocoanut leaves neatly bound together. This served as a stand for a shallow dish, in which was placed a circular piece of plantain leaf to facilitate the handling of the clay and preventing its adhesion to the unsized platter. With one or more handfuls of clay, according to the size of the pot, the base of the utensil was roughly shaped on the dish; then rolls of clay of the required thickness and previously prepared were built up layer after layer until the proper dimensions had been attained; the operator, the while turning the pot round and round, shaping it with her eye and hand. The vessels are set aside on a raised platform to dry for one or two days, according to the size of the pot and the state of the weather. When dry it is taken from the platform, superfluous clay on the inside scraped off with a Cyrena shell, and the excess of material on the outside removed by means of a fine strip of bamboo moistened. The hands of the potter moistened are gently passed over the inner and outer surfaces of the vessel to smooth them. The rim is finished off with the bamboo strip. For firing a primitive kiln is prepared in some open space near the hut, and bits of broken pottery are stuck in the ground a few inches apart to serve as a stand. Under the pot a layer of fine wood ashes and a quantity of cocoanut shells and scraps of firewood are heaped up and a wheel-like object larger than the pot is laid on its upturned base; against this are laid branches and firewood, which are to be lighted outside the vessel but are not to come in contact with it. The fuel is kindled and the flame fanned, if necessary, by two or three women, who, armed with sticks in both hands, act as stokers until the vessel is baked. It is removed with the sticks and left to cool upon a bed of fine sand, where it receives the necessary black stripes. The painting is accomplished by means of strips of unripe cocoanut husk 1 to 2 inches broad, laid on the pot while hot. The stain produced by the acid juice turns black in a moment. To save her fingers from being burnt the artist keeps the pot in position by means of a cocoanut-shell cup. The entire surface is then rubbed with moist strips of husk to give a light copper color to the whole surface. Makers' marks are added and the whole is completed.

The study of maize is the study of a large number of American Indian tribes. Ethnologists will therefore be grateful to Dr. J. W. Harshberger for his monograph on the origin and distributiou of maize in America. The origin of the plant is sought in the highlands of Mexico, south of the twenty-second degree of north latitude. From this source it got into the United States by two routes, through northern Mexico and through the West Indian Islands. It was carried to South America by the Isthmus of Panama, extending, according to Brinton, along the great Andean system until it reached the Gran Chaco, where we find the native tribes, no way related to the Kechuas of Peru, borrowing its name from these people. South American words for maize

extended all over the West Indian Islands, showing that it was introduced to this archipelago from the southern continent.

Even in our day the Mexicans excel in feather mosaics, some beautiful examples of which are to be seen at the National Museum. But in pre-Columbian times more attention still was paid to such matters. Of this we have evidence in the beautiful examples lately brought to light. Mrs. Nuttall, at the World's Congress of Archæology, presented colored sketches of a great number, and Dr. Seler resumed the subject. (*Ztschr. f. Ethnol.*, Berlin, XXV, 44.)

M. Adrien Mortillet, in a classification of weapons of offense, bases his subdivisions upon the relation of the action to the hand, (1) held in the hand, (2) working by means of something held in the hand, or (3) thrown from the hand. Each one of the classes of bruising, slashing, and piercing weapons may again be thus subdivided. The Africans have developed the slashing projectile in two forms, the bladed arrow and the thrown knife or trumbash. M. Dybowski read a paper before the Paris Anthropological Society upon the last-named weapon. (*Bull. Soc. d'Anthrop. de Paris*, 4. s., IV, 97–100.)

Mr. J. D. McGuire, in the *American Anthropologist* (Washington, VI, 307–320), attacks the division of the stone age into paleolithic and neolithic from a new point of view. Unwittingly archæologists have gotten into the habit of calling chipped stone by the former and battered and ground stone by the latter title. Mr. McGuire clearly shows that battering stone is easier and therefore may be older than the chipping art. He shows that among the best-known writers there is no unanimity of opinion as to the status of the chipped-stone age, and avers that the weight of authority is against the existence of any considerable period of time in which man lived either in Europe or America, when his only implements were those that were chipped.

The evidences of extensive prehistoric irrigation are found in Arizona. Mr. F. Webb Hodge brings them together in the *American Anthropologist* (Washington, VI, 323–330). In the valleys of the Salado and the Gila, in southern Arizona, the ancient inhabitants engaged in agriculture by artificial irrigation to a vast extent. The principal canals constructed and used by the ancient inhabitants of the Salado Valley controlled the irrigation of at least 250,000 acres. The outlines of at least 150 miles of ancient main irrigating ditches may be readily traced, some of which meander southward from the river a distance of 14 miles.

From many hundreds of scattered sources Dr. Max Bartels has gathered the literature of the world upon the history of medicine among primitive peoples. It is not generally noticed that savages have a practice of medicine and surgery, notwithstanding their theory refers every disease to spirit influences. Indeed, there are in most tribes, besides the medicine man, wise women and men who give themselves to the cure of disease by medicine and wounds by treatment. The

work of Bartels treats, first, of the medicine man and his diagnoses and then discusses separately: (1) The phenomena and means of sickness; (2) the physician and his social standing; (3) diagnosis and names of diseases; (4) medicines and their applications; (5) forms of medical prescription; (6) water cure, by bathing, sweating, and drinking; (7) massage as such and in sorcery; (8) diet and other hygienic measures; (9) the methods of sorcery in healing; (10) special diseases, eye, ear, epilepsy, etc.; (11) the prevention of diseases, epidemics; (12) surgery, small and gross. The indexes and bibliography of the work are most useful to further study.

Upon the question of the settlement of America the author of this summary at the World's Congress of Anthropology in Chicago took the ground that the peopling of the American Continent from Asia is the only hypothesis tenable upon present data. There never was known to history a day in which commerce was not going on. Asiatic species of animals have migrated in the present epoch. A series of land-locked seas lie on a great circle from the Indian Ocean to Vancouver Island. These seas abound in the best food products of the world. Winds are favorable, oceanic movements are favorable, climate is favorable.

It is easier now to follow the currents of the ocean and the trade winds than it is to oppose them. Indeed, one of the advanced movements of civilization was in so doing. But the first migrants did not venture into the great aerial and oceanic currents. They remained on the shallow and land-locked water, where the food was most abundant and the danger least. Migration could have derived much momentum from the *vis a tergo*, applied by hostile men or favoring winds and currents. But we must look for the strongest motive in the active desires for food, defense, shelter, adventure, etc.

ÆSTHOLOGY OR THE SCIENCE OF BEAUTY.

The arts of pleasure are now studied on the side of technical evolution or elaboration. The forms and colors of art objects are derived from natural objects or from other art objects of a simpler culture stage. The departures from the lines of nature are referred to the want of skill in the artist, the want of vision or imagination, and the technical limitations or least-resistance lines of the material.

As in the evolution of the industrial arts, the invention, the inventor, and the public want grow and are dwarfed co-ordinately, so in the fine arts. The best illustration of the union of minds in one complicated æsthetic effect the world has ever seen was the buildings of the Chicago Exposition. The union of the plans of a dozen geniuses of structure and decoration formed a kind of artist trust or combine, the last step in the synthesis of the beautiful.

The charm of this artistic climax was enhanced by the presence on the grounds and in the buildings of all forms of art—textile, fictile, coloring, graphic, glyphic, tonic, landscape, and architectural. These

represented the progress of taste—national taste, savage taste, barbaric taste, historic taste, woven together like a beautiful tapestry.

In a former summary was given the tabulated form of weapons and tools adopted by M. Adrién de Mortillet in his lectures before the Ecole d' Anthropologie. The course in 1893 was devoted to dress and adornment, their history and diversities, considered in relation to parts of the body. Adornment followed the parts of the body, as follows:

Jewelry of the head—crowns, diadems, and frontlets. Jewelry of the ears—drops, pendants, and studs. Nose jewels, inserted in the septum or alae. Labrets, pélélé, botoque, bezote, and labrets. Teeth jewelry. Neck jewelry, neck rings, collars, torques. Shoulder and breast jewelry, epaulets and gorgets. Waist decoration, bands flexible and rigid. Decoration of the lower part of the body. Arm jewels, armlets, bracelets. Finger jewelry. Leg decorations, leglets and anklets. Foot jewelry. Jewelry of the clothing. (*Rev. Mensuelle*, III, 96.)

No journal or magazine is devoted to this kind of study of comparative art and the natural history of art. The work of Henry Balfour on the evolution of decorative art and the papers of Holmes in the reports of the Bureau of Ethnology may be taken as text-books.

SOCIOLOGY.

The comparative history of society is nowadays studied in the following aspects:

(1) The family group, or really the groups of human beings that stand around the mother and child, their number and duration.

(2) The governmental group, involving the structure and actions of hordes, tribes, confederacies, states, nations, and international agreements.

(3) The industrial group, commonly called guilds, unions, boards of trade, chambers, for mutual offense and defense in business.

(4) Social groups, for mutual entertainment, help, culture, etc.

(5) Religious groups, studied in the comparative science of religions.

The United States in addition to its governmental assemblies undertakes the study of the combinations of men as laborers and as business men.

Every university has a school of political and social science, and in Philadelphia is published the journal devoted to that subject with extended bibliographers. The Johns Hopkins University school issues series of studies of great value. A section of the American Association is devoted to economics in the widest sense of the term. All periodicals are filled with sociology; it is the most attractive of all scientific hobbies.

MYTHOLOGY AND FOLK-LORE.

Prof. Caird defines religion to be "man's ultimate attitude toward the universe." But, in trying to arrange a number of objects in accord-

ance with this definition it would be necessary further to explain its verbal elements.*

Religion, as it enters the field of comparative or scientific study, is what men think concerning a spirit world and what they do in pursuance of such thinking. The thoughts of a spirit world involve the following questions:

(1) Its location and physiography, systems of cosmogony.

(2) Its peoples, their forms, origins, lives, thoughts, sayings, etc.

(3) Its government, including its entire social system.

(4) Its relation to this world.

The operative side of religion, or the cult, includes also

(1) The place of worship and its fittings in all their details.

(2) The organization of society on the basis of religion and the place of each individual in the system.

(3) The conduct in and with respect to the holy place, including prayer, sacrifice, fasting, incense, music, decorations, feasts, preaching.

(4) Piety or every-day conduct toward the gods, especially the conduct of the laity.

(5) Sacred books or what took their place in more primitive society. The Musée des Religions, or the Guimet Museum in Paris, publishes La Révue des Religions and special monographs.

For American religions study the works of Brinton, Boas, Dorsey, Powell.

At a meeting of the Anthropological Society of Washington the subject of breaking vases deposited with the dead was discussed. Mr. Cushing said that formerly the notion at the basis of the custom was to kill the vessel and send its spirit to dwell with the owner in the other world. In modern times the custom also was a precaution against grave robbers. Prof. N. G. Poletis, of the University of Athens, works out the study of breaking vessels as a funeral rite of modern Greece. Vessels either specially dedicated to the deceased or having been used at funeral rites are broken at the grave. Fragments of vases have been discovered on the Bathron, at the upper opening of tombs at Mycenæ; huge heaps of potsherds are found at old Alexandria, Greek, Egyptian, and Roman, belonging to various epochs. The present Greek custom is to break clay vessels upon the grave, and also as the remains pass out in front of the dead man's house. Sometimes the same thing goes on along the whole road following the funeral. While the priest pronounces the words: "Dust thou art and unto dust shalt thou return," he pours water upon the grave from a vessel specially brought for the purpose. This done the vessel is instantly broken while the priest flings with it upon the grave a handful of earth. (*J. Anthrop. Inst.*, XXIII, 28–41.)

In his course of lectures in the École d'Anthropologie, M. André

* Edward Caird. The evolution of religion. Gifford Lectures, 1890–'91 and 1891–'92. Glasgow, 1893, Maclehose, 2 vols., 400 and 334 pages.

Lefèvre chose for his theme: Beliefs of ancient Greece; the peoples and their gods. The order in which the argument proceeded was—

(1) Hellenic origins; (2) Animistic beliefs; (3) Cult of the procreative powers, fire and of heroes; (4) Divine personages: the Dodonean group, the air and the earth; (5) Primitive Asiatic influences, Phrygia, Phœnicia; (6) Formation and recension of the Iliad and the Odyssey; (7) The Achaians, the two unfound groups; (8) The gods of Homer: Olympus, Zeus; (9) The gods of Homer: Hera, Athena and Odysseus, Poseidon; (10) The solar group: Dorian Apollo, Hephæstos; (11) Life and death according to the Homeric Achæans (Patroclus); (12) The Homeric lower world; (13) Hesiod: The poet and his contemporaries and their conception of life; (14) Hesiod: the Theogony; (15) Hesiod: The Chronids, Titans, Tartarus, physical notions; (16) Hercules, the demigod; (17) Dyonyssos, Bassareus, Bagaios, Zagreus, Sachus; (18) Demeter and the mysteries; (19) Orphism; (20) Synciltism and decadence.—(*Rev. Mens.*, Paris, III, 26).

The fifth annual meeting of the American Folklore Society was held in Montreal, September 13. The society was incorporated, and measures taken to publish special monographs. The papers by Heli Chatelain on the retarded development of African civilization, by W. W. Newell on the material and objects of folklore, and by Adolf Gerber on Brer Rabbit, a comparative study, were of especial value.

ARCHÆOLOGY.

Dr. Moriz Hoernes lays down with great care the fundamental principles of a system of study and instruction in prehistoric archæology, of which the following is the scheme:

A.—DEFINITION.

1. The relation of prehistory to history and to the historical study of antiquities.
2. The place of prehistory in the syllabus of anthropology, its relation to physical anthropology and ethnology.

B.—ANALYSIS.

1. Propædeutics.
   a. History of the science.
   b. Study of resources.
      a. Literary sources, both direct and indirect.
      b. Monuments (attention, 1, to the topographic and, 2, museographic order, by means of examining localities and handling the objects). Classification of objects, both on the natural history and the archæological concept.
   c. Criticism and explanation.
2. Systematic representation.
   a. Fundamental factors: Culture areas and groups of mankind.
   b. Development factors: Invention, borrowing, remodeling, transmitting.
   c. Separate forms or classes: Language, religion, jurisprudence, the family, the state, the house, and the hearth; food, clothing, ornament, weapons, tools, industries, trade, navigation, art, etc.
3. Typological representation: Forms of dwelling places, industrial places, fortifications, religious inclosures, cemeteries, depots, also apparatus, with their function and development.

4 Historical representation.

a. Natural history: Origin of men, stocks, original home, dispersions, formation of races.

b. Culture history: Intellectual domination of men over animals, tertiary times, palæolithic and neolithic periods, bronze period; the orient, its peculiar archæology and the influence of its historic culture stages upon prehistoric Europe; first appearance of later peoples of Europe in their historic sequence.

The year 1893 marks an epoch in American archæology and divides students into two sharply separated schools. The older school believes in the existence of paleolithic man in the United States, the new school does not. In the presence of such sites as Trenton, the former discovers geological evidence of the very great antiquity of man in the occurrence of rudely chipped objects *in situ*, the other school says these objects are in the talus and have rolled down from the surface above. The old school says, but these pieces are very rude and have nacred surfaces. Men used very rude or paleolithic tools first, and after that came the finer-finished tools. The new school says these pieces are the rubbish, the rejected mass of stone knappers. They are quarry refuse, and not tools at all. Many hundreds of thousands of them have been picked up in the workshops of the modern Indians. Mr. William H. Holmes, of the Bureau of Ethnology, made most of the diggings by which this opinion is substantiated.

In a paper by Holmes on the distribution of stone implements in the tide water portions of Maryland and Virginia, the author has in view the whole history of each stone implement, from the source of the raw material to the finding of the specimen where it finally left the hand of the savage. He speaks of the origin and form of the stone, the processes of manufacture, the rejection at the source of the stone of all pieces tried and found wanting, the transportation, the caching or storing, the specialization of form in after work and the uses or functions. Four materials were used for chipped tools, quartzite bowlders, quartz pebbles, rhyolite quarried in the mass, jasper quarried in the mass. Of these the author says: "It is of the utmost importance, in taking up the stone implements of a region, that each material be traced to its source so that from this point of view a study can be made of the work of quarrying, shaping, transporting, and finishing." Holmes gives the following classes of implements, in the order of distance from the quarry, beginning with the heaviest:

1. Mortars, and many improvised tools.
2. Sharpened bowlders for rude mauls and axes.
3. Notched and sharpened bowlders for hafting.
4. Picks and chisels for soapstone and other quarries.
5. Net sinkers, carried along the streams.
6. Pestles, shaped by picking.
7. Hammer stones, the better the shape the further they were carried.
8. Soapstone vessels, often 10 miles from quarry.
9. Grooved axes, selts, scrapers, drills, knives, spear points, arrow points, pipes, ornaments.

The paper is clearly illustrated. (*Am. Anthrop.*, Washington, VI, 1–14.

The *Journal of Geology*, published in Chicago, No. 1, January–February, 1893, will have a department of archæologic geology, under the direction of Prof. William H. Holmes. Already papers on archæology have appeared.

Comparative study slowly unravels the tangle of American archæology and ethnology. Dr. J. Walter Fewkes witnessed and became familiar with the snake dance of the Hopi (Moki) Indians, and in studying the old writers, Sahagun in particular, was struck with the wonderful similarity of the Mexican pictures to the real dances in Arizona. This, with the co-operation of Dr. Ed. Seler, Dr. Fewkes has worked out in the *American Anthropologist*. (Washington, VI, 285–306.)

American archæology was greatly enriched by the publication of a folio volume on the ruins of Tiahuanuco in the highlands of ancient Peru. The work consists of two parts, the text and 42 photolithographic plates. By means of maps, illustrations in the text, ground plans and sketches, the authors have placed themselves entirely at the service of the student. This work is of the same excellent character as the Necropolis of Ancon, issued by Reiss and Stübel a few years since. The authors discuss the ethnic origin of the sculptures, the material, the dimensions of the blocks (weighing as much as 150 tons), the means of transport for many miles and across several inlets of Lake Titicaca; the skill in dressing, smoothing and polishing, and carving, with implements not much harder than the stone itself.

A great shock was given to European archæology by attacks upon the age of the Canstatt and the Neanderthal skull. It is well known that Prof. De Quatrefages went so far as to claim a Canstatt and a Neanderthal race for early Europe. In the report of the German Anthropological Congress it was shown that the first-named skull was found associated with Roman pottery, and the last-named was picked up on the surface. At the same conference Prof. Virchow indorsed the opinion of Steenstrup that the evidence of contemporaneity of man and mammoth in Europe is not only inadequate, but for climatic and geologic reasons no such co-existence was possible.

Oscar Montelius began the publication of his great work, *La civilisation primitive en Italie depuis l'introduction du métal*, upon which he has labored for twenty years. It will be an album of 300 plates grand 4to, with more than 3,500 woodcuts and explanatory text. His volume upon the history of the influence of Orientalism upon Europe during the Stone Age, the Bronze Age, and the Iron Age till about 500 B. C. is his *Civilization of Sweden in Heathen Times* in new form, done into French by Salomon Reinach.

The number of *Nature* for August 10 contains the account of a suit for libel brought by H. Rassam against Dr. Budge of the British Museum growing out of assertions alleged to have been made by the

latter in connection with the former's disposal of certain finds in Assyria. The outcome was a judgment against Budge of £50, which his confreres paid, because they believed he was acting always in the interests of the museum. (*Nature*, London, 1893, XLVIII, 343.)

PHYSIOGRAPHY AND ANTHROPOLOGY.

All sciences are coming more and more to contribute to anthropology. The International Geographic Conference in Chicago furnished an example of this statement. Mr. Gardiner G. Hubbard selected as the topic of his presidential address, The relation of air and water to temperature and life. The following titles also show the current of thought:

The relation of geography to History. Francis W. Parker.
Norway and the Vikings. Capt. Magnus Andersen.
Geographic instruction in public schools. W. B. Powell.
The relation of geography to physiography in our educational system. T. C. Chamberlain.
Early voyages along the northwest coast of America. George Davidson.

In their responses to call, Gen. Eaton, Gen. Greely and Maj. Powell all dwelt upon this close bond between geography and history.

Dr. F. Schrader delivered a lecture before the École d'Anthropologie on the influence of terrestrial forms upon human development. In the order of sequence from the North the author distinguishes five zones:

(1) A boreal zone, quasi continuous and little varied.

(2) A north temperate zone, extended, much varied, presenting for the development of humanity the greatest possible number of conditions.

(3) A south temperate zone analogous but inferior to the last named. More fit to receive culture than to create it.

(4) An inter-tropical or equatorial zone, hot, rainy, with alternations of aridity and continuity of heat. Less diversified in its ensemble than the temperate zone.

(5) A frigid zone of the south, of no importance in the development of man. (*Rev. Mens.*, Paris, III, 206–219.)

The destruction of vast numbers of animals by the men of early times in the eastern continent created a gap in the evidence upon which the knowledge of very early migrations is to be based. M. Edward Dupont has brought together his studies upon the fauna and man of the quaternary epoch (*Bull. Soc. Belge de géol.*, 1892). Especially valuable is the paper on the study of man considered as a geological force. Species disappeared before the coming of man, doubtless. Quite as true is it that they were exterminated by man. But in the earliest times this destruction was feeble and the author inclines to the view that the quaternary fauna disappeared through natural causes.

In the *Journal of the Anthropological Society of Bombay** for 1893,

* Vol. III, pp. 9–21.

is a paper on the treatment of cattle diseases. The original work was scratched on the leaf of the Palmyra (*Borassus flabelliformis*). Their use of drugs, especially those derived from the vegetable kingdom, was by no means inconsiderable. Forty-eight different plants are named, and in the essay identified, making it a valuable contribution to knowledge.

PROGRESS OF ANTHROPOLOGY IN 1890.

By Prof. Otis T. Mason.

INTRODUCTION.

In the present summary of anthropology it is designed to show the progress of the science in a somewhat elementary manner, in order to reach a larger number of readers. The phrase, "natural history of man" is here taken to mean the employment of the apparatus, processes, and principles of natural history to the study of mankind. This definition will be subject to constant changes. Just as soon as any set of phenomena or facts concerning our species may be arranged, classified, and studied after the manner of the naturalist, only then should they be admitted into the laboratory of anthropology.

Once admitted, their difficulties will not cease. In order to keep pace with other natural knowledge, these series of phenomena or facts must ever be subjected to new forms of scrutiny. Botanists and zoölogists are constantly inventing better apparatus and refining their methods, and furthermore, each department of these sciences requires special machinery and appliances to perfect the delicacy of the senses and to enable the investigator to hold large masses of facts before his mind at once.

Anthropology therefore is required to be a most vigorous science, keeping pace with every improvement in other sciences, both general and special, and refining its own apparatus and methods perpetually.

The summary which at the close of each year faithfully chronicles the topics discussed, the organized means of research, the improvement in apparatus and the results attained, serves as a historical monument by means of which future students may trace their way backward in the development of the science.

A complete syllabus of anthropology would include—first, what man is, and second, what man does. What man is may be denominated *structural anthropology;* what man does, *functional anthropology.*

Science always deals with phenomena, and the name of each science is derived from the things observed and studied. For instance, we

may arrange the various parts of the subject under consideration in the order of phenomena.

PHENOMENA.	SCIENCE.
All mankind as natural objects	Anthropology.
What man is—Structural anthropology.	
The embryo of mankind and life of the individual	Ontogeny.
The body of man (specific and comparative)	Anatomy.
The functions of the body	Physiology.
Form and color, weight and number	Anthropometry.
The nervous system in relation to thought	Psycho-physics.
Natural divisions of mankind	Ethnology.
What man does—Functional anthropology.	
To expresss his thoughts	Glossology.
To supply his wants	Technology.
To gratify his desires	Aesthetics.
To account for phenomena	Science and philosophy.
To co-operate in the activities and ends of life	Sociology.
In presence of a spirit world	The science of religion.
The past of human life and actions is studied—Science.	
(1) In things decayed or dug from the earth	Archæology.
(2) In the decipherment of inscriptions	Palæography.
(3) In the acts and sayings of the unlettered	Folk-lore.
(4) In written records	History.
Sciences helpful to anthropology.	
To determine the material of art-products	Mineralogy.
To fix the age of relics	Geology.
In studying the mutual effects of man and the earth on each other	Geography.
To determine man's place in nature and his acquaintance therewith	Botany and zoölogy.

It will readily be seen that one man may not be profoundly versed in anthropology, but everyone who reads the foregoing syllabus carefully will at a glance discover that there is some particular branch of the subject for which he is fitted by his daily occupations.

The resources already in existence for the student, both general and special, will be noted in the proper order. They may be classified as follows:

(1) Those relating to the subject as a whole.

(2) The resources of biological studies.

(3) Psycho-physical investigations, that is, the study of psychology experimentally.

(4) The races of men.

(5) Language.

(6) Arts and archæology.

(7) Sociology.

(8) Philosophy, folk-lore, and mythology.

(9) The relation of nature to man.

I.—GENERAL ANTHROPOLOGY.

It must be remembered in this connection that we have not now to lay the foundation for a new science, but to bring together the results of an exceedingly vigorous one. The resources at our command are:

(1) General treatises, like Tylor's "Anthropology," courses of lectures, encyclopædias, and classifications.

(2) Societies with their published proceedings and transactions and periodicals devoted entirely to the study of man.

(3) Assemblies and congresses, national and international, with their *Comptes-rendus.*

(4) Museums and collections, public and private, with catalogues and books of instructions. Expositions.

(5) Special libraries containing both literature and albums.

(6) Laboratories, as in other sciences, for investigation both in structural and functional anthropology.

The most noteworthy event in our science for Americans, was the Congrès International des Américanistes, at Paris. At this meeting the *compte-rendu* of the seventh session held in Berlin (1888) was presented. The list of papers there printed is as follows:

On the name America, Guido Cora. Basques, Bretons, and Normans on the coast of North America in the beginning of the sixteenth century, M. Gaffarel. Publication of writings and documents relative to Columbus and his times, on the occasion of the celebration of the fourth centenary of the discovery of America, Guido Cora. Ensayo histórico de la legislacion primitiva de los estados españoles de América, M. Fabié. Bemerkungen zur modernen Litteratur über die Entdeckung Amerikas, M. Gelcich. On the Nahuatl version of Sahagun's Historia de la Nueva España, Daniel G. Brinton. Archæology of Mexico and South America, Dr. Heger. Colliers de pierre de Porto Rico, Jimenez de la Espada. Antiquities of the State of Vera Cruz, Hermann Strebel. Archæological result of a voyage to Mexico, Edward Seler. Origin, working hypothesis, and primary researches of the Hemenway Southwestern Archæological Exposition, F. H. Cushing. Antiquities of Nicaragua, Charles Boralius. Antiquités céramiques de l'île de Marajo; sur la néphrite et la jadeite, Ladislau Netto. Sur la provenance de la néphrite et la jadeite, R. Virchow. Die Verbreitung der Eskimo Stämmer, H. Rink. The Aztecs and their probable relations to the Pueblo Indians of New Mexico, S. B. Evans. De l'emploi de la coca dans les pays septentrionaux de l'Amérique du Sud, A. Ernst. Die Bekleidung eines reichen Guajiro Indianers, C. M. Pleyte. Sur la craniologie américaine, R. Virchow. An anatomical characteristic of the hyoid bone of the pre-Columbian Pueblo Indians, Arizona, Drs. Wortman and Ten Kate. Die Frage nach der Einheit oder Vielheit der amerikanischen Eingeborenenrasse geprüft an der Untersuchung ihres Haarwuchses, Gustav Fritsch. Die Chronologie des diluvialen Menschen in Nordamerika, Émil

Schmidt. Vestiges laissés par les populations pré-Colombiennes de Nicaragua, Désiré Pector. Über alt-peruanische Hausthiere, Dr. Nehring. Die Nutzpflanzen der alten Peruaner, L. Wittmack. Diritto e morale nel Messico antico, Vincenzo Grossi. La cremazione in America prima e dopo Cristoforo Colombo, Grossi. Anthropologie des peuples d'Anahuac au temps de Cortez, R. Hartmann. Was America peopled from Polynesia? Horatio Hale. Étude sur la langue Mam, le Comte de Charencey. Textes, analyses et vocabulaire de la langue Timucua, Raoul de la Grasserie. De la famille linguistique Pano, *id.* The historical archives of the Hemenway Southwestern Archæological Expedition, Adolf Bandelier. Sur le débris de cuisine (Sambaquis) du Brésil, H. Müller. Das Verhältniss zwischen dem Ketschua und Aimaráid. Sur une ancienne carte de l'Amérique, M. Gaffarel. Verwandtschaften und Wanderungen des Tschebtscha, Max Uhle. Trois familles linguistiques des bassins de l'Amazone et de l'Orenoque, Lucien Adam. Bibliographie des récentes conquêtes de la linguistique sud-américaine, Lucien Adam. Das Tonalamatl der Aubin'schen Sammlung und die Verwandten Kalenderbücher, Edward Seler. Die Entzifferung der Maya Handschriften, E. Förstemann. Classification chronologique des monuments architectoniques de l'ancien Pérou, Ferdinand Borsari. Contribution à l'américanisme du Cauca (Colombie), Léon Douay. Linguistique des peuples qui habitent le centre de l'Amérique du Sud, von den Steinem. Figures péruviennes en argent, Lüders.

The Section of Anthropology in the American Association for the Advancement of Science had for its presiding officer Dr. Frank Baker, the director of the National Zoölogical Park. His address will be noticed in the chapter on Biology. The following are the titles of important papers read: Indian origin of maple sugar, H. W. Henshaw; Fort Ancient, W. K. Moorehead; Aboriginal stone implements of the Potomac Valley, W. H. Holmes; Earthwork near Fosters, Little Miami Valley, Ohio, F. W. Putnam; Brains and medisected head of man and chimpanzee, Burt G. Wilder; Gold beads of Indian manufacture from Florida and New Jersey, C. C. Abott; A study in mental statistics, J. Jastrow; Arts of modern savages for interpreting archæology, O. T. Mason; Relation of mind to its physical basis, E. D. Cope; Ancient hearth in the Little Miami Valley, F. W. Putnam; Evolution of a sect, Anita N. McGee.

The sixtieth meeting of the British Association for the Advancement of Science was held in Leeds, September 3–13. The vice presidential address of Mr. John Evans was devoted mainly to this question: What is the antiquity of the human race, or, rather, what is the antiquity of the earliest objects hitherto found which can with safety be assigned to the handiwork of man? As regards Tertiary man there are three classes of evidence, to wit: (1) the presumed discovery of parts of the human skeleton; (2) that of animal bones said to have been cut and worked by the hand of man; and (3) that of flints thought to be arti-

ficially fashioned (J. Anthrop. Inst., XII, 565; Tr. Hertsford Nat. Hist. Soc., I, 545). In summing up the evidence, Dr. Evans says that the present verdict as to Tertiary man must be in the form of "not proven." The latter part of the address is devoted to the question of the Aryan language and the Aryan race and to the improved resources of anthropological study. Papers were read upon the following topics: Hereditism, F. O. Morris; Religion of the Australian aborigines, J. W. Fawcett; The present aspect of the jade question, F. W. Rudler; Is there a break in mental evolution? Lady Welby; Unidentified peoples in Britain in pre-Roman times, Dr. Phéné; Yourouks of Asia Minor, T. Bent; Aryan cradle land, J. Stuart Glennie; Reversions, Nina Layard; Physical development, G. W. Hambleton; Archæological remains bearing on the origin of the Anglo-Saxons in England, Dr. Munro; Duggleby "Howe," E. Maure Cole; Romano-British graveyard in Wetwang-with-Fimber, J. R. Mortimer; Minute neolithic implements, H. C. March; Retrogression in prehistoric civilization in Thames Valley, H. Stopes; Boring of stone hammers, W. Horne; Stethographic tracings of male and female respiratory movements, Wilberforce Smith; Human remains at Woodyates, Wittshire, J. G. Garson; Old and modern excavations of the Wandsdyke at Woodyates, Gen. Pitt Rivers.

The British Association committees form an active part of the general meetings. Upon anthropological subjects were the Report upon the new edition of the little handbook for collectors entitled Notes and Queries; Report of the committee on anthropometric laboratory; On prehistoric inhabitants of Britain; On nomad tribes of Asia Minor; On northwestern tribes of Canada; On India. The British Association for the Advancement of Science, coöperating with the Anthropological Institute of London, organized a lecture course on anthropology, differing from the Paris course not only in being less technical, but also in the repetition of the lectures before institutions and before the public in various cities throughout the United Kingdom. The series was as follows:

(1) Physical anthropology. By Dr. Garson.

(2) The geological history of man. By F. W. Rudler.

(3) Prehistoric dwellings, tombs, and monuments. By A. L. Lewis.

(4) Development of the arts of life. By Henry Balfour.

(5) Social institutions. By E. W. Brabrook.

(6) Anthropometry. By G. W. Bloxam.

During the current year the beneficent results of the Paris Exposition began to appear, especially in the form of reports on the various congresses. Of the tenth session of Congrès international d'Anthropologie et d'Archéologie préhistoriques, M. Hamy, Membre de l'Institut, and general secretary of the congress, prepared the Compte Rendu, a pamphlet of 48 pages. The French Association for the Advancement

of Science met during the current year at Limoges, August 7–15. In this association is a section devoted exclusively to anthropological subjects.

The twenty-first meeting of the German Anthropological Association was held at Munster, Westphalia, August 11–15. At each one of these annual meetings it is customary to explore thoroughly the anthropological resources of the region. Professor Hosius this year read a paper on the geognostic structure of Westphalia, the prehistoric stations and the remains of quaternary animals found there, and Professor Nordhoff followed up this communication with one upon the urns and the weapons found in this state.

The German Association of Naturalists and physicians (Versammlung deutscher Naturforscher und Aertzte) must not be confounded with the General Anthropological Society of the empire and Austria. The first named held its sixty-third meeting in Bremen, 15–20th September.

The Russian Association of Naturalists and physicians held its eighth meeting in St. Petersburg, January 8–19. In the 70 sessions 2,200 took part and over 400 communications were made. One of the ten sections was devoted to geography, ethnography, and anthropology. The subjects discussed were, migrations, history of primitive culture, anthropometry, local archæology, and the ethnography of Russia. Upon this last point the opportunities of study are unparalleled and the Russian ethnographers have not failed to make use of them.

There is no better illustration of the rapidity with which the science of anthropology has asserted itself than the museo de la Plata, a sketch of which is here given (Plate I). The capital of the province of Buenos Ayres, the city of La Plata, was founded in 1882, to replace as a seat of provincial authority the city of Buenos Ayres declared in 1880 to be the capital of the republic. In the brief space of time intervening, under the energetic management of Signor Francisco P. Moreno, a fully equipped museum is completed. The anthropological portion owes its existence almost entirely to the director. It is especially rich in material illustrating the aboriginal life of the republic. (Plate II.—Ground-plan of Museum.)

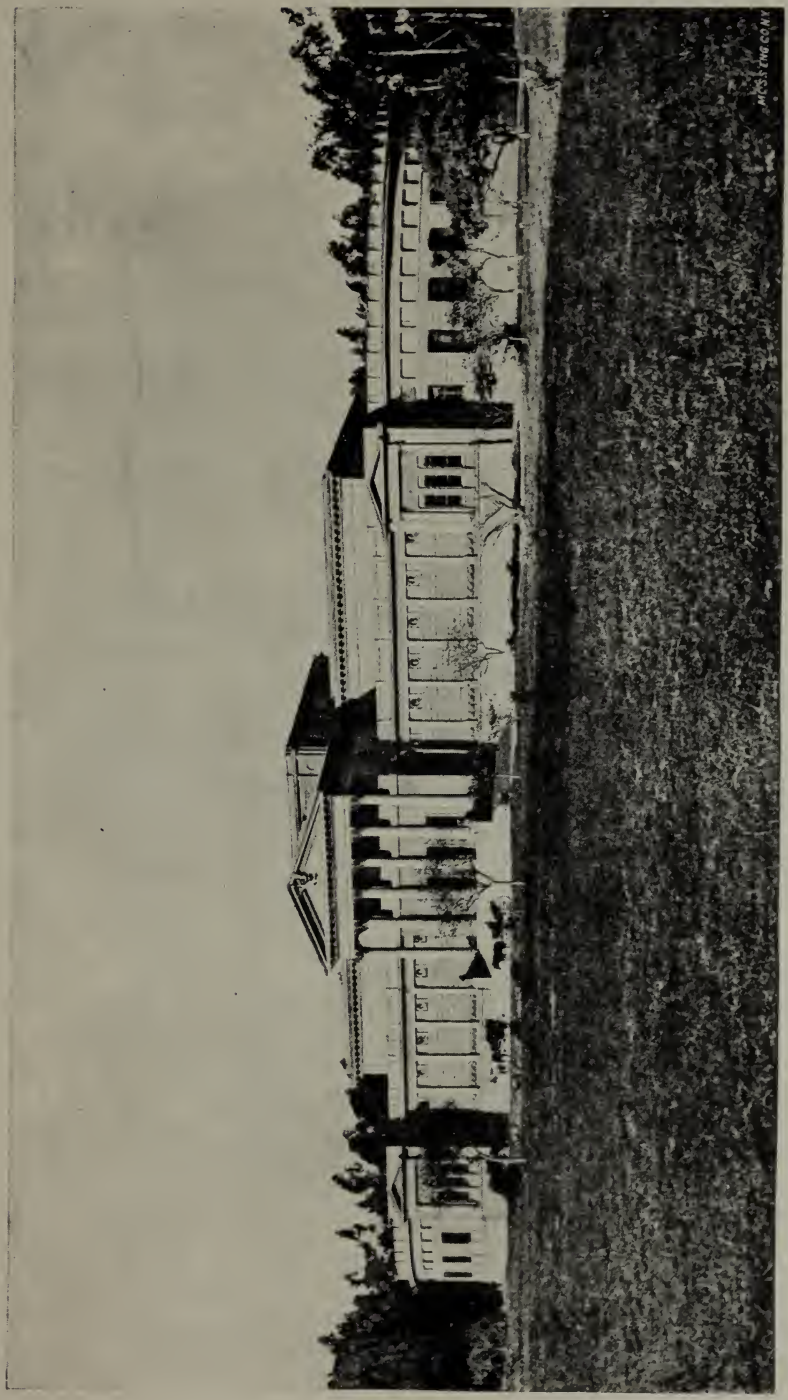
In the summary of last year a brief account was given of the manner in which the science of man is covered in the institutions of Paris. Dr. Sophus Müller contributes the following list for Copenhagen:

(1) Royal Museum of Northern Antiquities. Devoted to early Denmark, including the stone, the bronze, the iron, and the historic period, until 1660.

(2) The Folk Museum, general historic museum, from 1660 to 1800. Will be united with the Museum of Northern Antiquities under one direction in a new building.

(3) Rosenburg Castle, the collections to illustrate the life and history of the present dynasty.

(4) The Fredericksburg Castle Collection, general Danish history from 1000–1800.



MUSEO DE LA PLATA.

(5) A new museum for mediæval and modern times in other countries of Europe.

(6) Ethnographic Museum, arranged to show the civilizations of the world by tribes. This was probably the first collection in Europe to be laid out upon a strictly ethnographic basis.

(7) Royal Museum of classic antiquities in Prinzens Palais.

(8) Royal collection of coins in Prinzens Palais.

No mention is made here of the royal galleries of art nor of the collection of crania and skeletons in the Zoölogical Museum. The visitor to Copenhagen never fails to spend a day in the Thorwalsden Museum, into which the affectionate esteem of his fellow citizens has gathered the works of the great sculptor and his personal effects and displayed them most attractively.

A work of primary importance, which the director of every other anthropological museum should imitate with great promptness and care, is Dr. Hamy's volume entitled Origines du Musée d'Ethnographie du Trocadero, Paris. The first exotic presents known to have come to France were the gifts of Haroun al Raschid to Charlemagne, 801 and 807, A. D. From that moment to the present all sorts of treasures, gotten in many ways, have been in the charge of public keepers. The modern museum is shown by this volume to have been the growth of ages, the beginning or germ being the curiosity of the king or some of the nobility. It would be well if every important museum could have a volume of history like Dr. Hamy's "Origines."

In addition to a thorough history of each public museum, prepared by its own authorities, the exigencies of intercommunication have led to the founding of a journal for museum workers, entitled, *Internationales Archiv für Ethnographie* (Leyden), and in February, appeared the first number of the Bulletin des Musées, Paris. It is edited by Mr. Edward Garnier and Léonce Benedite, and resembles the Berlin "Year Book of the Royal Prussian Art Collections," under the heading of "Mouvement des Musées it gives notes on other national galleries and collections, and a bibliography.

The standard list of journals remains the same. No anthropologist can afford to neglect the following list:

The American Anthropologist, Washington; *Archiv für Anthropologie*, Braunschweig; *Archivio per l'Antropologia*, Firenze; *Bulletins de la Société d'Anthropologie de Paris; Internationales Archiv für Ethnographie*, Leyden; *Journal of the Anthropological Institute of Great Britain and Ireland*, London; *L'Anthropologie*, Paris; *Mittheilungen der Anthropologischen Gesellschaft in Wien; Verhandlungen der Berliner Gesellschaft für Anthropologie, etc.*, Berlin; *Zeitschrift für Ethnologie*, by the same society.

Journals of a popular character which can not be neglected are: *Academy*, London; *The American Naturalist*, New York; *Athenæum*, London; *Ausland*, Stuttgard; *Nature*, London; *Popular Science Monthly*, New York; *Révue Scientifique*, Paris; *Science*, New York.

II.—BIOLOGICAL ANTHROPOLOGY.

This enormous subject, covering practically the whole of the structural part of anthropology, is amply represented in a few publications. For titles alone the Index Medicus and the Index Catalogue of the Surgeon-General's library are the best guides accessible to Americans.

In England this part of the subject is most elaborately worked out in the biological and zoölogical journals. The Paris *Bulletins*, the German *Archiv* and *Zeitschrift*, the Italian *Archivio*, and the Austrian *Mittheilungen*, though covering the entire science, are specially rich and full in biological matters. With the original papers, accounts of meetings, reviews of publications and bibliography there is little more to be desired either for the beginner or for the advanced student.

Dr. Frank Baker devoted his vice-presidential address before Section H of the American Association to the organs of the human body that point to a past condition much lower than the present;—indications of the pathway by which humanity has climbed from darkness to light, from bestiality to civilization. These organs are of two kinds, those that added or improved and those that are taken away or atrophied. Those specially mentioned are connected with the modifications of the limbs, with the erect posture, and with the segmentation of the body.

In the hand the special flexor muscle of the thumb is a new element, while the palmaris longus is in the category of disappearing muscles. The torsion of the humerus and the incurvation of its trochlear surface and the scapular index all show a progressive development both in the individual and in the race.

The palmar fascia, the epitrochles-anconeus, a process resembling the supra-condyloid foramen of marsupials, the perforation of the olecranon fossa remind of primitive conditions. While the region of the hand and fore arm indicates increase of specialization, the upper part of the limb generally testifies to a regression. This principle is illustrated by examples. The hind limbs of apes as compared with the human legs and the acquisition of the erect posture are closely examined. Upon the latter point Dr. Baker summarizes the evidences that the adaptation of man to the erect posture is yet far from complete.

These resemblances with anthropoid apes are held to indicate not lineal descent, but common ancestry, and the differences in the races of mankind do not justify our separating them on structural grounds.

In his work on races and peoples Dr. Daniel G. Brinton summarizes the physical characteristics used in classification of mankind:

SCHEME OF PRINCIPAL PHYSICAL ELEMENTS.

Skull	Dolichocephalic	long skulls.
	Mesocephalic	medium skulls.
	Brachycephalic	broad skulls.
Nose	Leptorhine	narrow noses.
	Mesorhine	medium noses.
	Platyrhine	flat or broad noses.

Eyes	Megaseme	round eyes.
	Mesoseme	medium eyes.
	Microseme	narrow eyes.
Jaws	Orthognathic	straight or vertical jaws.
	Mesognathic	medium jaws.
	Prognathic	projecting jaws.
Face	Chamæprosopic	low or broad face.
	Mesoprosopic	medium face.
	Letoprosopic	narrow or high face.
Pelvis	Platypellic	broad pelvis.
	Mesopellic	medium pelvis.
	Leptopellic	narrow pelvis.

On the 13th of March Mr. J. Venn gives in *Nature* the results of a series of measurements made upon the students of Cambridge University, in England. The following queries are put, according to Dr. Galton's system: (1) The distance of the clearest vision, (2) traction upon the dynamometer, (3) force of pressure by the hand, (4) volume of the head, (5) capacity of pulmonary inspiration, (6) stature, (7) weight of the body. The most interesting result relates to the head, which is found to be larger in volume in the better students, and in all classes to increase up to the age of 25. Into comparison with this study may be brought that of Pauline Tarnowsky upon 150 prostitutes, 100 female thieves, 100 peasants, and 50 women of culture:

	Prostitutes.	Thieves.	Peasants.	Cultured.
Antero-posterior diameter and transverse maximum divided by 2	160.3	161.6	163.2	164.2
Horizontal circumference	531.6	535.5	537.0	538.0
Frontal diameter	137.5	138.6	139.2	145.9
Cephalic index	80.0	80.2	79.9	79 1
Stature	153.5	155.6	156.4	154.1

The vexed question at this moment in the science called criminology is whether there is an ensemble of characteristics which consign their possessor to a life of crime, or which may be used to distinguish different sorts of criminals. In some form the Italian school are committed to this doctrine, and are more or less opposed by the French school.

In 1889 Dr. N. Anoutchine, of Moscow, published an elaborate work on stature of men in Russia compared with that of other nations. An excellent summary of this monograph is given in L'Anthropologie (I, 62–74), with chart and map. Every work of importance on human biology is noted in the Index Medicus, published by Dr. J. S. Billings and Dr. Robert Fletcher, of the Surgeon-General's Office, in Washington. The permanent record of this literature is to be found in the Index-Catalogue of the Surgeon-General's Office. Further important works are the following: Anthropometric Identification of Criminals, Bertillon; Anthropometry, Galton, Hurd; Ascent of Man, Baker; Cerebral Convolutions, Turner; Chest Development in Young Persons, Berry; Color of Skin in Oriental Races, Beddoe; Corsets, Robin; Cross-

Infertility, Gulick; Evolution and Disease, Sutton; Evolution of Sex, Geddes, Ryder; Giants, Laloy; Heredity, Hutchinson, La Pouge, Turner, Weismann, Thompson, Stoller; Human Selection, Wallace; Hypertrichosis, Jaws and Teeth, Talbot; Longevity and Climate, Remondino, Humphrey; Olecranon Perforation, Lamb; One-sided Occupation, Müller; Orbitomaxillary Suture, Thoms; Paternal Impressions, Bullard; Physical Proportions, Greenleaf, Bellary; Physiological Selection, Romanes; Physique of Women, Bowditch; Pigment in the Negro, Morison; Right handedness, Baldwin; Rumination, Einhorn; Sex, Wallian; Skull of Charlotte Corday, Topinard, Benedikt; Tailed Men, Schaeffer; Teeth of Prehistoric Skeletons, Ward; Weight of the Human Body, Ranke.

III.—PSYCHOLOGY.

In the science of anthropology, psychology is the application of measures to the activities of the mind through its material agency, the brain and the nervous system. The two sets of phenomena, those of the normal mind and healthy brain and those of the abnormal mind, are included. The former find their able organ in the *American Journal of Psychology*, Worcester, Massachusetts, and the latter phenomena are treated in the journals of neurology.

Abroad the greatest activity prevails in this department of research. Wundt's *Studien*, Dubois-Reymond's *Archiv*, Pflüger's *Archiv*, most of the physiological journals, *Mind*, *Brain*, and even the periodicals devoted to criminology, must be consulted.

The *American Journal of Psychology* furnishes (III, 275–286) a report on the amount of psychophysical instruction in the following American institutions of higher learning: University of Wisconsin, University of Nebraska, New York College for the Training of Teachers, Columbia College, Harvard University, Yale University, Army Medical Museum, University of Pennsylvania, Indiana University, Clark University, and University of Toronto. In each case the instructors' names are given and a syllabus of the instruction. It would be well to repeat here, did space permit, these curricula, to mark the present position of this branch of anthropology. It will suffice to append Dr. J. McK. Cattell's account of work done in the psychological laboratory of the University of Pennsylvania.

"Special courses in psychology were given at the University of Pennsylvania by Professor Fullerton and Prof. James McKeen Cattell. Professor Fullerton delivered two courses—one for undergraduates, the other for graduate students. In these courses special stress is laid on psychological analysis and those regions of psychology which border on the theory of knowledge. Professor Cattell gave three courses extending through the year—an introductory course in experimental psychology, a course beginning with the special study of some psychological problem and taking up in the second half year comparative, social, and

abnormal psychology, and an advanced course in physiological and experimental psychology. These courses include either practical work or research on the part of the student. A lecturer on philosophy and an assistant in psychology are about to be appointed, and additional courses will be given next year.

"In addition to these special courses, physiological, abnormal, and comparative psychology may be studied in the medical and biological departments of the university. These are probably without rival in America, and offer complete courses of lectures, practical work, and clinics. Psychology borrows from and lends to all the sciences. Every one of the large number of advanced courses offered by the university bears some relation to psychology, and may prove useful to the student. The asylums and hospitals will be found of special advantage to the student of psychology.

The new library building of the university is nearly completed. There is a special endowment for the purchase of philosophical and psychological books, and any books needed by students for special work will be obtained. The university press is about to begin the issue of a series of monographs representing work done in the fields of philosophy and psychology. The first number, now in press, is a psychological study on "Sameness and Identity," by Professor Fullerton. Following this number will be a series of researches from the laboratory of psychology and an edition of Descartes' "Meditations," with Latin and English texts and philosophical commentary."

Professor Cattell makes the following report of work done in the psychological laboratory. "The chief work before experimental psychology is the measurement of mental processes. As experimental physics is devoted to the measurement of time, space, and mass in the material world, so experimental psychology may measure time, complexity, and intensity in consciousness. In so far as cases are investigated in which one mental magnitude is the function of another, a mental mechanics is developed.

"The laboratory possesses apparatus, which measures mental times conveniently and accurately. This apparatus has been described in *Mind* (No. 42), but since then it has been improved. The chronoscope has been altered and a new regulator made, so that the mean variation of the apparatus is now under one-thousandth of a second. New pieces have been built for the production of sound, light, and electric stimuli. Apparatus for measuring the rate of movement and for other purposes have been added. The observer is placed in a compartment separated from the experimenter and measuring apparatus. With this apparatus researches are being carried out in several directions. Professor Dolley is measuring the rate at which the nervous impulse travels, using two different methods. In one series of experiments an electrical stimulus is applied to different parts of the body, and a reaction is made either with the hand or foot. The rate of transmission in

the motor and sensory tracts of the spinal cord has thus been determined. In a second series of experiments two stimuli are given at different parts of the body, and the interval between them adjusted until the observer seems to perceive them simultaneously. It is thought that these experiments will throw more light on human physiology than cases in which the nerve (motor only) of a partly dead frog is artificially stimulated. The times are also of interest to psychology, as they are needed in order to determine purely mental times. Mr. Witmer is measuring the personal difference in reaction-times, and the work will be extended to different mental processes. These times seem to vary with age, sex, nationality, education and occupation, and their study may have practical value as well as theoretic interest. Length of life should be measured by rate of thought. Experiments are also being made on the variation in the reaction-time from hour to hour and day to day. With the co-operation of Dr. Weir Mitchell and other eminent neurologists the alteration in the time of physiological processes in diseases of the nervous system is being studied. It is believed that such tests may be of use in diagnosis. The nervous impulse may be sent through the system in different directions until a relative delay discovers the diseased part. Recovery and progression may be studied by noting the alteration in time.

"Owing to the introduction of cerebral surgery and the advances recently made in the treatment of diseases of the nervous system, any method which may make diagnosis more exact deserves careful study. In addition to the time of physiological processes in disease, other tests of loss of sensation, power and intelligence, are made in the laboratory. The following ten tests are recommended; the methods, etc., are described in an article now in press for *Mind:* (1) Dynamometer pressure; (2) rate of movement; (3) sensation-areas; (4) pressure causing pain; (5) least noticeable difference in weight; (6) reaction-time for sound; (7) time for naming colors; (8) bisection of 50 centimeters line; (9) judgment of 10 seconds time; (10) number of letters remembered on hearing once. These determinations are made not only on those who are suffering from disease, but also on every one who wishes to be tested. It is hoped that the same tests will be made elsewhere, so that the results of a large number of observations may be compared and combined. The undergraduate students in experimental psycology undertakes a course of laboratory work in which about two hundred tests and measurements are made. It is hoped that when a sufficient mass of data has been secured, it will have some scientific value. In the cases of two of the tests given above, the rate of movement and the pressure causing pain, researches are being carried out in the laboratory. By altering the distance and nature of the movement, and the point of the body to which the pressure causing pain is applied, new quantitative results are obtained."

Professor Fullerton is carrying on a research to determine the rate

at which a simple sensation fades from memory. A stimulus is allowed to work on the sense-organ for one second, and after an interval of one second a stimulus slightly different in intensity is given for one second, and the least noticeable difference in intensity is determined by the method of right and wrong cases. The interval between the stimuli is then altered, and it is determined how much greater the difference between the stimuli must be in order that it may be noticeable. The rate of forgetting is thus measured in terms of the stimulus. Intervals varying from one second to three minutes have been used. For these experiments new apparatus was constructed, and it was discovered that when sensations of light are excessive and last for one second, the least noticeable difference in intensity is not about one one-hundredth, as is supposed, but much the same as for the other senses under like conditions. Other observations, such as the importance of keeping the time of stimulation constant, the stronger stimulus coming before or after the weaker, the degree of confidence, the personal and daily variation, etc., have made a new investigation of the least noticeable difference in sensation necessary. This is at present in progress, while further work on memory must wait for its completion. Mr. De Bow is in the meanwhile making experiments determining the time of stimulation giving the greatest accuracy of discrimination.

The rate, extent, and force of movement is the subject of a somewhat extended investigation, which will not be completed for some time. The maximum rate of movement has been noticed above. Experiments on the maximum pressure have been published, as also on extent of right and left handed movements. But the least noticeable difference in the rate, extent, and force of movement has never been studied in the same way as the least noticeable difference in passive sensation. Yet it would seem to need such study even more, owing to the importance and obscurity of the "sense of effort."

The laboratory possesses apparatus for studying the time, intensity, and area of stimulation needed to produce the just noticeable sensation and a given amount of sensation. These mental magnitudes are correlated so that one may be treated as the function of the other. The results of studying the relation of time to intensity have been published in *Brain* (pt. 31), it being found that the time colored light must work on the retina in order that it may be seen, increases in arithmetical progression as the intensity of the light decreases in geometrical progression. The relation of area to intensity and time is now being studied. Other experiments on the relation of intensity, time, and area of stimulation, as determined by the length of the reaction-time and accuracy of discrimination, have been begun.

The laboratory has a valuable collection of Koenig's apparatus for the study of hearing and the elements of music, and a spectrophotometer, a perimeter, and other pieces for the study of vision. Work on hearing and vision has been begun in several directions, but is at pres-

ent delayed for lack of workers. Some progress is, however, being made in studying the fusion of sensations of light, the laboratory possessing special apparatus by which colored surfaces of given areas may in any succession work on the retina for given times. Mr. Newbold, who has been helping with the experiments on memory, is about to begin a research on attention, and it is hoped that next year there will be others ready to undertake original work. Among the subjects for which apparatus has been secured and preliminary study has been made are: The building of complex perceptions, exertion, and fatigue, the measurement of contrast, the association of ideas, and subconscious mental processes.

Dr. Joseph Jastrow has prepared for the series of Fact and Theory Papers a small volume on the time-relations of mental phenomena. "The study of the time-relations of mental phenomena is important from several points of view. It serves as an index of mental complexity, giving the sanction of objective demonstration to the results of subjective observation; it indicates a mode of analysis of the simpler mental acts, as well as the relation of these laboratory products to the processes of daily life; it demonstrates the close inter-relation of psychological with physiological facts, an analysis of the former being indispensable to the right comprehension of the latter; it suggests means of lightening and shortening mental operations, and thus offers a mode of improving educational methods; and it promises in various directions to deepen and widen our knowledge of those processes by the complication and elaboration of which our mental life is so wonderfully built up. An excellent bibliography of well selected authorities relating to general psycho-physics, time-reactions, adaptive reactions, and association times will be found at the end of the volume. The *American Journal of Psychology*, edited by President Stanley Hall, and published at Clark University, Worcester, Massachusetts, is the standard authority on the physical side of psychology.

Metaphysical psychology, represented in the English publication *Mind*, may be said to have fairly entered the arena of anthropology since the revelations of consciousness are now subjected to experimental examination. The following topics show the range of study on both sides: Animal Intelligence, Alix, Foveau; Double Consciousness, Binet; Effect of Fatigue on Muscular Contraction, Lombard; Effect of Music on Animals, Stearns, Weissman; Experimental Psychology, Jastrow; History of Reflex Action, Hodge's Hypnotism, Felkin, Innes, Lays, Moll, St. Clair, Bonjean, and many others; Inhibition in the Phenomena of Conscience, Beriet; Intelligence of Animals, Corsetti; Mental Evolution, Varigny; Mental Tests, Cattell; Origin of Mind, Carus; Origin of Human Faculty, Romanes; Perception of Length and Number Among Little Children, Binet; Physiognomy and Expression, Mantegazza; Principles of Psychology, James; Psychic Life of Micro-Organisms, Beriet; Psychic Time Measures, Fricke; Psychology of

Attention, Ribot; Relation of Mind to Its Physical Basis, Cope, Salter; Sense of Direction in Animals, Lubbock; Space Consciousness, Spencer.

IV.—ETHNOLOGY.

Since the dividing lines between races have come to be drawn upon color rather than upon osteology, much ingenuity has been expended in devising a scheme of colors. Broca's standards, published in the first edition of the British Association "Anthropological Notes and Queries," are well known. They appear also in the French "Queries." Dr. Beddoe, president of the London Anthropological Institute, has further studied these Broca standards and makes the following subdivisions:

(1) Red (including pink) passing through reddish brown towards black.

(2) Orange, or reddish yellow, passing through brown towards black.

(3) Yellow, passing through yellow brown and olive brown toward black.

(4) Gray or cendre, darkening to black.

Dr. Beddoe presents an ingenious table, in which the proportions of these colors are given for people that he has specially examined.

Elements of color—Decads.

	Gray.	Yellow.	Orange.	Red.
Chinese	2.7	3.9	0.2	3.0
N. Guinea	0.3	0.5	2.5	6.7
N. Hebrides	.....	.....	4.0	6.0
Maoris, adult	.....	0.7	5.0	4.2
Maoris, children	.....	.....	4.1	5.8
Australians	.....	.....	5.4	4.4
Melaneseans	.....	.....	4.1	5.8
Cingalese	.....	.....	6.2	3.7
Gujeratis, After exposure	.....	.....	6.2	3.8
Goanese, After exposure	.....	1.0	5.0	4.0

This is followed by a more extended table, in which the proportions of Broca's numbers entering into each skin color are given. The notable differences of form existing between the parts of the skeleton and the other profound portions of the body in different groups of mankind seem to have been produced antecedent to these migrations and separations which have brought about race distinctions at present, such as color of skin and eyes and texture of the hair.

Dr. Daniel G. Brinton has published a volume on Races and Peoples, in which he combines the results of a course of lectures before the Academy of Natural Sciences of Philadelphia. This volume supplies a vacancy previously existing, since there was no good summary of ethnology published in English giving the results of modern research. The peculiar doctrine of the author is the location of man's origin in southwestern Europe and the parts of Africa opposite, both on zoölogical and archæological grounds. His classifications of mankind, though agreeing essentially with those of other recent systematists, possess

sufficient interest to be repeated, since they grow somewhat out of Dr. Brinton's theory concerning man's cradle land. They are reproduced here in order to enable the reader to compare them with those of Welcker, Topinard, Hæckel, Müller, Flower, Quatrefages, and others in preceding summaries of the Smithsonian Report:

General ethnographic scheme.

Race.	Traits.	Branches.	Stocks.	Groups or peoples.
Eurafrican...	Color, white,	I. South Mediterranean.	1. Hamitic	1. Libyan.
				2. Egyptian.
				3. East African.
	Hair, wavy		2. Semitic	1. Arabian.
				2. Abyssinian.
				3. Chaldean.
	and	II. North Mediterranean.	1. Euskaric	Euskarian.
	Nose, narrow.		2. Aryac	Indo-Germanic or Celtindic peoples.
			3. Caucasic	Peoples of the Caucasus.
Austafrican	Color, black or dark,	I. Negrillo	1. Central African	Dwarfs of the Congo.
			2. South African	Bushmen, Hottentots.
	Hair, frizzly and	II. Negro	1. Nilotic	Nubian.
			2. Soudanese.	
			3. Senegambian.	
			4. Guinean.	
	Nose, broad.	III. Negroid	1. Bantu	Caffre and Congo tribes.
Asian	Color, yellow or olive; hair, straight and	I. Sinitic	1. Chinese	Chinese.
			2. Thibetan	Natives of Thibet.
			3. Indo-Chinese	Burmese, Siamese.
	Nose, medium.	II. Sibiric	1. Tungusic	Manchus, Tungus.
			2. Mongolic	Mongols, Kalmucks.
			3. Tartaric	Turks, Cossacks.
			4. Finnic	Finns, Magyars.
			5. Arctic	Chukchis, Ainos.
			6. Japanese	Japanese, Koreans.
American	Color, coppery,	I. Northern	1. Arctic	Eskimos.
			2. Atlantic	Tinneh, Algonkins, Iroquois.
			3. Pacific	Chinooks, Kolosh, etc.
	Hair, straight or wavy, and	II. Central	1. Mexican	Nahuas, Tarascos.
			2. Isthmian	Mayas, Chapanecs.
	Nose, medium.	III. Southern	1. Atlantic	Caribs, Arawaks, Tupis.
			2. Pacific	Chibchas, Quichuas.
Insular and littoral peoples.	Color, dark	I. Nigritic	1. Negrito	Mincopies, Aetas.
			2. Papuan	New Guineans.
			3. Melanesian	Feejeeans, etc.
	Hair, wavy or frizzly, and	II. Malayic	1. Malayan	Malays, Tagalas.
			2. Polynesian	Pacific Islanders.
	Nose, medium or narrow.	III. Australic	1. Australian	Australians.
			2. Dravidian	Dravidas, Mundas.

—Brinton, D. G., Races and Peoples, New York, 1890, p. 99.

Scheme of the Eurafrican race—North Mediterranean branch.

[Tribes in *italics* are extinct.]

I. Euscaric stock	1. Euscaric group	Euscaldonac, Basques, *Sards*, *Siculi*, *Aquitanians*, *Picts*, (?) *Ligurians*, (?) *Cantabrians*.
II Aryac stock	1. Celtic group	*Gauls*, Highland Scotch, Irish, Welsh, Manx, Bretons, *Celtiberians*, *Cymri*.
	2. Italic group	*Latins*, *Umbrians*, *Oscans*, *Sabines*, Italians, French, Spanish, Portuguese, Roumanians, Wallachians.
	3. Illyric group	*Illyrians*, Albanians, *Thracians*, *Japyges* (?).
	4. Hellenic group	*Pelasgi*, *Phrygians*, *Lydians*, *Macedonians*, Greeks.
	5. Lettic group	Letts, Lithuanians, *Old Prussians*.
	6. Teutonic group	*Goths*. *Vandals*, *Franks*, *Angles*, *Saxons*, *Suevi*, Scandinavians, Germans, Danes, Dutch, English, Anglo-Americans.
	7. Slavonic group	Russians, Poles, Czechs, Servians, Croatians, Wends, Bulgarians, Montenegrins.
	8. Indo-Eranic group	Armenians, Persians, *Bactrians*, Hindoos, Kafirs, Dards, Beluchis, Hunzas, Gypsies.
III. Caucasic stock	1. Lesghic group	Avars, Laks, Udes, Kurins.
	2. Circassic group	Circassians, Abkhasians.
	3. Kistic group	Tush, Karaboulaks.
	4. Georgic group	Georgians, Mingrelians, Lazs.

—Brinton, Races and Peoples, New York, 1890, p. 140.

Scheme of Aryac migration.

[Extinct peoples in *italics*.]

		European.	Asian.
Primitive Aryans (Western Europe).	Northern Peoples (Blondes).	Letto-Lithuanians.	
		Teutons.	
		Slavonians.	*Phrygians.*
		Thracians.	*Cappadocians.*
		Dacians.	Armenians.
		Hellenes.	*Medes.*
	Southern Peoples (Brunettes).	*Illyrians.*	Iranians.
		Italians.	Indians.
		Celts.	

—Brinton, D. G., Races and Peoples, New York, 1890, p. 153.

Scheme of the European race—South Mediterranean Branch.

[Extinct peoples in *italics*.]

I. Hamitic stock.	1. Libyan group	*Numidians*, *Getulians*, *Libyans*, *Mauritanians*, *Guanches*, Berbers, Rifians, Zouaves, Kabyles, Tuareks, Tibbus, Ghadumes, Mzabites, *Ghanatas*, *Etruscans*, *Amorites*, *Assyrians*, *Hittites* (?).
	2. Egyptian group	Copts, Fellaheen.
	3. East African group	Gallas, Somalis, Danakils, Bedjas, Bilins, Afars, Khamirs.
II. Semitic stock.	1. Arabian group	*Himayarites*, *Sabeans*, *Nabotheans*, Arabs, Bedawin, Ebkilis.
	2. Abyssinian group	Amharnis, Tigris, Tigrians, Gheez, Ethiopians, Harraras.
	3. Chaldean group	Israelites, Arameans, Samaritans.

Brinton, D. G., Races and Peoples, New York, 1890, p. 104.

Scheme of the Austafrican Race.

I. Negrillo branch..	1. Equatorial group	Akkas, Tikkitikkis, Obongas, Dokos, Vonatoans, *Kimos* of Madagascar.
	2. South African group	Bushmen, Hottentots, Namaquas, Quaquas.
II. Negro branch...	1. Nilotic group	Shilluks, Dinkas, Bongos, Kiks, Baris, Nuers.
	2. Sudanese group	Haussas, Battas, Bornus, Kanoris, Ngurus, Akras.
	3. Senegambian group	Serreres, Banyums, Wolofs, Foys.
	4. Guinean group	Ashantis, Dahomis, Fantis, Yorubas, Mandingoes, Veis, Krus.
III. Negroid branch.	1. Nubian group	Nubas, Barabras, Dongolowis, Pouls, Tumalis, Nyam Nyams, Monbuttus.
	2. Bantu group	Caffres, Zulus, Bechuanas, Sakalavas, Damas, Herreros, Suahelis, Ovambos, Bassutos, Barolongs, Bengas, Duallas, Wagandas.

—Brinton, D. G., Races and Peoples. New York, 1890, p. 174.

Scheme of the Asian Race.

I. Sinitic Branch..	1. Chinese Group	Chinese.
	2. Thibetan	Thibetans, Ladakis, Nepalese, Bhotanese.
	3. Indo-Chinese Group	Birmese, Siamese, Annamese, Cambodians, Cochin-Chinese, Tonkinese.
II. Sibiric Branch..	1. Tungusic Group	Tungus, Manchus.
	2. Mongolic Group	Mongols, Kalmucks.
	3. Tartaric Group	Turcomans, Yakouts, Turks (Osmanli), Usbeck, Kirghis, Cosacks, Huns.
	4. Finnic Group	Finns, Lapps, Esthonians, Ugrians, Magyars, Mordvins, Samoyeds, Ostyaks, Voguls, Livonians, Karelians.
	5. Arctic Group	Chukches, Koraks, Kamschatkans, Namollos, Ghiliaks, Ainos.
	6. Japanese Group	Japanese, Koreans.

—Brinton, D. G., Races and Peoples. New York, 1890, p. 194.

Scheme of Insular and Litoral Peoples.

I. Negritic stock.	1. Nigrito Group	Mincopies, Aetas, Schobaengs, Mantras, Semangs, Sakaies.
	2. Papuan Group	Papuas, New Guineans.
	3. Melanesian Group	Natives of Feejee Islands, New Caledonia, Loyalty Islands, New Hebrides, etc.
II. Malayic stock..	1. Malayan Group	Malays, Sumatrese, Javanese, Battaks, Dayaks, Macassars, Tagalas, Hovas (of Madagascar).
	2. Polynesian Group	Polynesians, Micronesians, Maoris.
III. Australic stock.	1. Australian Group	Tasmanians, Australians.
	2. Dravidian Group	Dravidas, Tamuls, Telugus, Canarese, Malayalas, Todas, Khonds, Mundas, Santals, Kohls, Bhillas.

Brinton, D. G. Races and Peoples, New York, 1890, p. 220.

It is not necessary to more than mention the essay at classification made by Dr. Lombard the preceding year and published in the Bulletins de la Société d'Anthropologie, Paris (XII, 129; 185). The author starts out with the hypothesis that the human species first appeared

in the circumpolar region during the Miocene epoch and that it expanded slowly and progressively over all the continents. As soon as the parts of this original group separated, races were formed which set up a movement from north to south, the more recent and better perfected driving before them the older and more degraded. Three primary races are demanded by this theory, and their modern representatives are to be seen in Tierra del Fuego, Cape Colony, and Tasmania or Australia.

The best journals on ethnography and ethnology are the organs of the great societies in England, France, and Germany. The geographic magazines and publications of all the societies devoted to geography can not be overlooked. While their ruling motive is the conquest of the world for civilization they do not fail to mention and describe the aborigines. The *Internationales Archiv für Ethnographie*, Leyden, edited by J. D. E. Schmeltz, is designed exclusively for museum directors who have in charge ethnographic material.

The difficulty still remains of confounding language with blood, in this area of anthropology, to such an extent that lists of tribes contain tongues, and *vice versa*. Trained ethnologists, however, make the proper distinction, and gradually the error will eliminate itself.

General works on Ethnology.—The beech tree in Ethnology, Taylor; Ethnography, Races and Peoples, Brinton; Ethnology in relation to races and peoples, Achelis; Geographic names, Hirrle, also Bulletin I, United States Board of Geographic names; Numeration in the light of ethnography, Günther, Reinach; Pygmies, Werner; Race and disease, Hoffmeister, Stokris; Race susceptibilities, Grieve: Teeth of different races, Belty.

America.—Age of puberty among Indians, Holder; Americanists, Brinton; Beothuks, Gatschet; Cherokees, Moony; Cherokees and Mound-builders, Thomas; Eskimo, Murdoch, Rink; Illustrated Americana, Hunnewell; Indians of Puget Sound, Eells; The Mexicans, Gooch, Seler; Northwest Coast tribes, Jacobsen; Omaha and Ponca Indians, Dorsey; Peopling of America, Quatrefages; South American Culture, Stübel; Tribes of Canada, Boas; Ethnography of Venezuela, Marcano; Western Denes, Morice.

Europe.—Aryan cradle-land, Glennie, Huxley, Taylor; Basques, Stoll; Ethnography of Europe, Lombard; Ethnography of Turkey, Garnett; Ethnology of British Isles, Rhys; Etruscans, Brinton, Bugge; Finland, Reuter; Germans and Slavs, Virchow; Lapps, Amich, Deniker, Khabouzine, Rabot; Origin of the English, Freeman; Prehistoric races of Italy, Taylor; Russia, Stuart; The Slavs, Hellwald; Stature in Russia, Anoutchine; Tartars in the Crimea, Deniker.

Asia.—Annametes, Deniker; Anthropology in India, Ibbetson; Armenia, Lanin; Asia Minor, Bent; Cambodia, Combette; Caucasus, De Morgan; China, Gordon, Tcheng; Cochin China, Combette, Faure; Ethnography of Western Asia, Lombard; History of Israel, Renan;

India, Tavernier; Indo-China, Rosset; Japanese studies, Remy; Kirghiz, Khabouzine, Kurds and Yesides, Kovalewsky; Thibet, Delbard, Rockhill, Sandberg.

Africa.—Angolese, Topinard; Bantu stock, Haarhoff; Congo tribes, Stanley (the Stanley literature in geographic journals and scientific periodicals), Ward; Dahomy, Delbard; Gaboon, Delbard; Madigascar, Oliver; South African Ethnology, Macdonald.

Oceanica.—Australia, Porter, Howitt, Reclus; Borneo, Woodford; Indian Archipelago, Baron Hoevell; Flores and Celebes, Weber; New Caledonia, Combette; New Hebrides, Imhaus; Polynesian race, Fornander; Solomon Islanders, Woodford; Tasmania, Roth; Torres Strait, Haddon.

Prof. A. H. Keane, of London, prepared for Chambers' Encyclopædia, new edition, articles on ethnographic titles.

V.—GLOSSOLOGY.

The resources of linguistic studies in the United States are, on the classical side, represented by the *American Journal of Philology*, and on the ethnic side by the studies and publications of the American Oriental Society, by Dr. Daniel Brinton's American series, and by the collections of the Bureau of Ethnology in Washington.

Abroad, the list of philological journals is too long to reproduce; furthermore, in most of them language is studied quite apart from man who uses it. Trübners catalogues, not forgetting the Journal of the Royal Asiatic Society; Revue de Linguistique; Zeitschrift der Morgenländischen Gesellschaft, Lazarus and Steinthal's Zeitschrift and Friedlander's Catalogues must be consulted for works in special lines. The following papers may be consulted: Asiatic affinities of Malay languages, Wake; Blackfeet language, Tims; Category of Moods, Grasserie; Chinook jargon, Hale; Comparative Grammar, Grasserie; Eskimo Vocabularies, Wells; Ethnographic basis of Language, Leitner; Evolution of Language, Murphy; Gothic languages, Balg; Indo-European linguistics, Regnaud; Language of the Missisaguas, Chamberlain; Manual of Comparative Philology, Schrader; New Linguistic Family, Henshaw; Phonograph in the Study of Songs, Fewkes; Poule language, Tautain; Science of Langaage, Sayce; Semitic languages, Wright; Textes Manchu, Bang; Timucua text, Gatschet; Tupi language, Dom Pedro; Zulu Dictionary, Manner.

VI.—TECHNOLOGY.

Klemm's plan of tracing out the lineage and migrations of human inventions, perfected later by General Pitt-Rivers, is really the most productive of scientific results among ethnologic methods. The study of an art in its historic elaboration may be called technography and the tracing of an art through the tribes that practice it ethnotechnics. At any rate, every year some one among the host of anthropologists gathers the specimens and the evidence to show how one of our well known

implements, processes, or art products has come to be what it is. The following is a good example of this: A symposium was held by the Anthropological Society of Washington to study the arrow-maker's art. Six members made communications and their results are published in the *Anthropologist.* Each reader was an expert in his field, so that, practically, there is little more to be said on that subject. Illustrations of some of the methods are to be found in the Reports of the Smithsonian Institution, but the perfecting of the point is shown only in the *American Anthropologist* and is reproduced here to give the subject a wider circulation. The steps are as follows: (1)

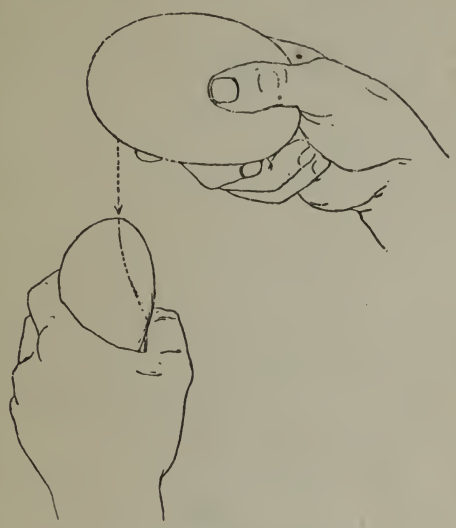


FIG. 1.—Free hand or direct percussion.

Free hand or direct percussion; (2) direct percussion, manner of

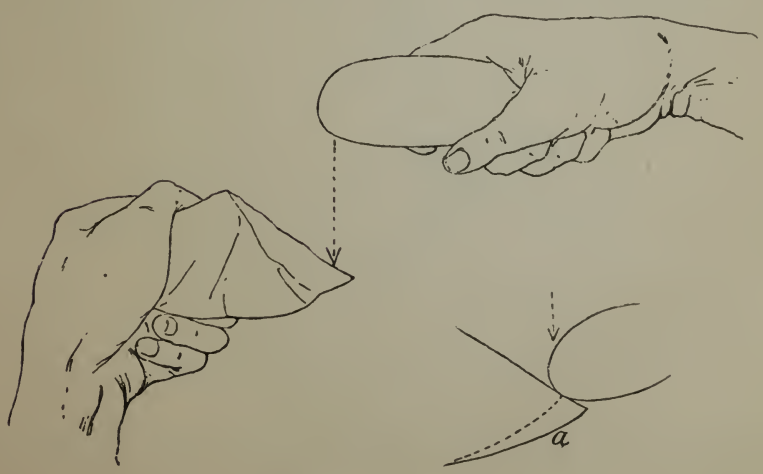


FIG. 2.—Direct percussion.

striking when the edge is sharp; (3) indirect percussion, practiced by

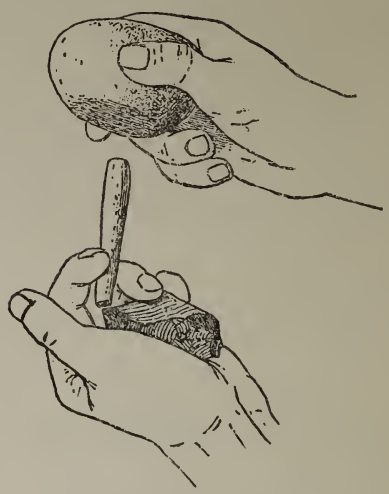


FIG. 3.—Indirect percussion.

the Wintuns and described by B. B. Redding; (4) indirect percussion,

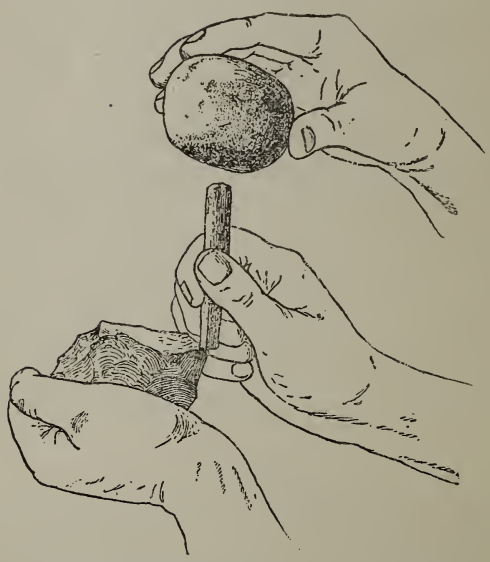


FIG. 4.—Indirect percussion. Two persons engaged.

two persons being concerned; practiced by the Apaches, according to

Catlin; (5) flaking by pressure, a bone implement being used, *a*, bone

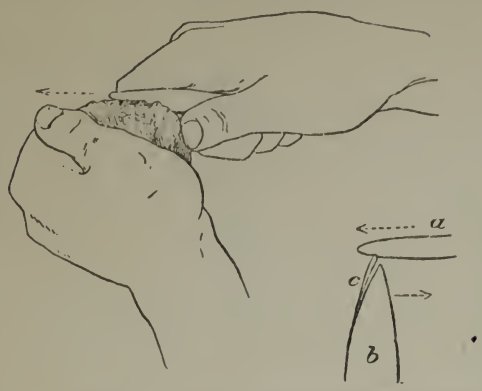


FIG. 5.—Flaking by pressure; a bone implement being used.

tool, *b*, the stone, *c*, the flake; (6) flaking by pressure; manner of

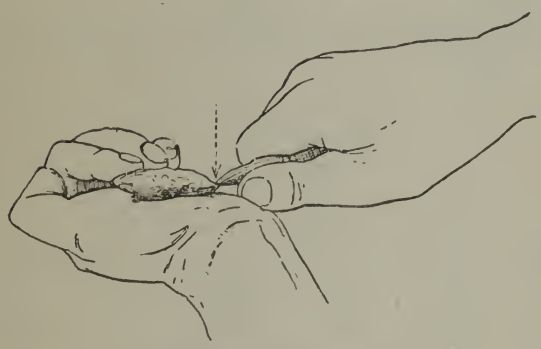


FIG. 6.—Flaking by pressure.

holding as observed among many tribes by J. W. Powell and others;

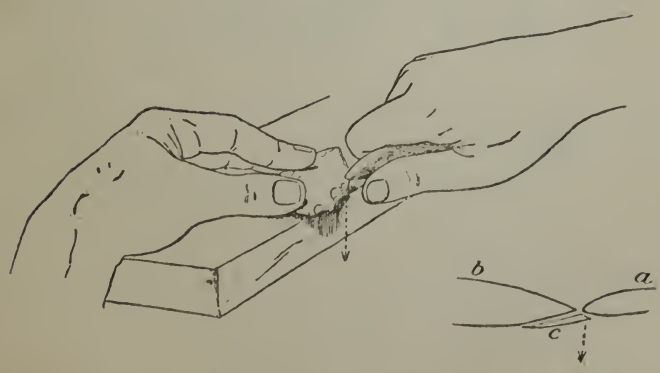


FIG. 7.—Flaking by pressure.

(7) flaking by pressure, a bone point being used, the implement to be

used resting on a support; (8) flaking by pressure, bone pincers being used.

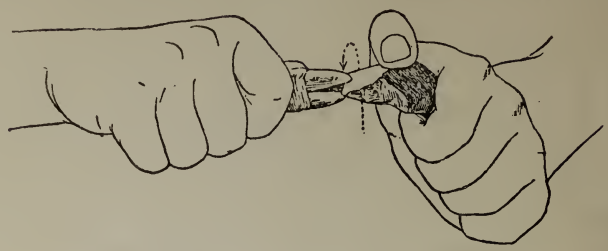


FIG. 8.—Flaking by pressure; bone pincers being used.

An excellent example of the study of art genealogically is Henry Balfour's description of the old British pibcorn or horn pipe and its affinities. (*J. Anthrop. Inst.*, London, XX, 142–154, 2 pl.) The family tree would stand thus:

Prototype.

(Cornstalk or slender reed with vibrating tongue.)

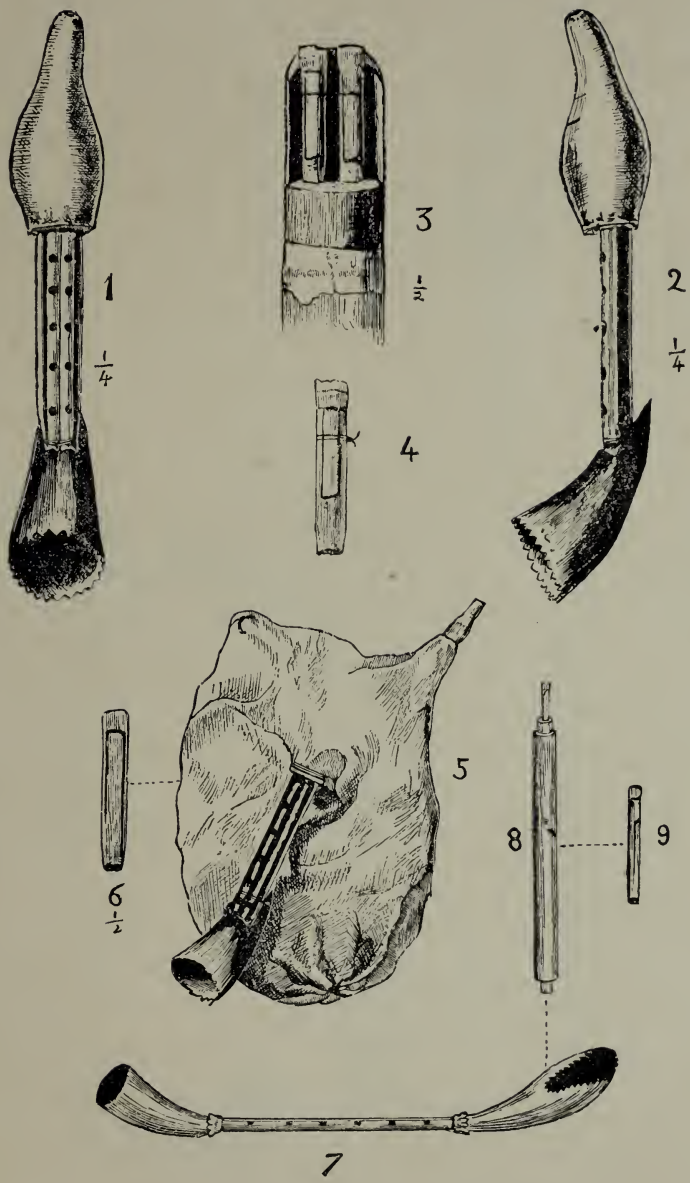
Single reed pipe with movable reed (*e. g.* Arab pipe).

- Double pipes. (Arghool.)
- Double pipes. (Zummarah.)
  - Persian bagpipes. (nei ambánah.)
  - Double bagpipes form, with two horn bell-mouths. (Arab zouggárah.)
    - (Hindoo Magoodi, &c., types with horn bell-mouth.)
    - Double pipes with single bell-mouth. (Greek hornpipe.)
      - Greek bagpipes.
- Single pipe with reed-cover and horn bell-mouth. (Pibcorn.)

In the accompanying plates the relationships are better presented to the eye. They are marked III and IV.

EXPLANATION OF HENRY BALFOUR'S PLATE III.

Fig. 1. Double hornpipe, from the village—dio Maria, Tenos, Grecian Archipelago.
Fig. 2. Side view of same.
Fig. 3. Upper portion of same, with gourd mouth-piece removed, showing reeds.
Fig. 4. One of the sounding reeds removed.
Fig. 5. Bagpipes from the Grecian Archipelago.
Fig. 6. One of the sounding reeds removed.
Fig. 7. Pibcorn from the island of Anglesea.
Fig. 8. Back view of the pipe, with end pieces removed, showing reed *in situ*.
Fig. 9. Sounding reed of same.



HORNPIPE AND BAGPIPES, GRECIAN ARCHIPELAGO; AND PIBCORN FROM ANGLESEA.

EXPLANATION OF PLATE IV.

Fig. 10. Double reed pipes, Zummarah, Arab, from Egypt.
Fig. 11. Single reed pipe from Egypt.
Fig. 12. Double pipes, Toomeri, Deckan, India.
Fig. 13. Same, with gourd removed, showing sounding reeds *in situ*.
Fig. 14. Hindoo "horn-pipe" with double pipes and large gourd reservoir.
Fig. 15. same, with gourd and horn bell mouth removed, front view, showing sounding reeds *in situ*.

Mr. Walter Hough, of the U. S. National Museum, in a very elaborate manner, worked out the primitive methods of fire-making, so that he is much better acquainted with the art than any savage ever was. The geographic distribution of each form is interesting in the light of ethnography, and the gradual elaboration of this primitive art up to the last century an instructive chapter in the growth of invention.

Barr Ferree, of the Leonard Scott Publishing Company, wrote a series of articles on the influence of climate and nature in giving shape and character to primitive architecture. The subject is one of great interest.

J. E. Watkins, of the U. S. National Museum, follows the historic method in tracing the p rogress of the carrying industry and the elaboration of modern engineering.

W. H. Holmes publishes in the annual report of the Bureau of Ethnology a paper on the evolution of ornament, based on the close study of a large series of aboriginal pottery, basketry, and other fabrics. It is shown that many of the patterns which have had the greatest popularity in the world originated among primitive peoples. A list of important papers follows: Aboriginal Fire-making, Hough; Artistic Anatomy-Richer; Boomerangs, Baker; British Pibcorn, Balfour; Cats from Bubas, tis, Virchow; Climate and Architecture, Ferree; Culture Plants, Richter; Currency and Measures in China, Morse; Dawn of Metallurgy, Mello; Evolution of the Gondola, Pierson; Evolution of Ornament, Holmes; Fortification, Clarke; Garden Vegetables, Sturtevant; Industrial Arts in India, Birdwood; Japanese Pottery, Bowes; Maple Sugar, Henshaw; Mechanic Art in the Stone Age, Hayes; Music in New Hebrides, Hagen; Musical Notation in the Middles Ages, *sub voce;* The Nephrite-jadeite question, Berwerth; Origin of Bronze, Wilson; Origins of Technology, Espinas; Primitive Surgery, *sub voce;* Proas, Sturtevant; Quarry Workshop in the District of Columbia, Holmes; Sources of Jade, Pierce; Swords, *sub voce;* Throwing Spear, Nuttall; Trade route from Peking to Kashgaria, Bell; Venezuela Pottery, Ernst; Wild Horse of Sungaria, Trouessart; Writing Materials and Books among the Ancient Romans.

VII.—ARCHÆOLOGY.

The two archæologies, classic and pre-historic, have for their official organ the *American Journal of Archæology and of the History of Fine Arts.* (Boston, Ginn & Co.) It speaks authoritatively for the Arch-

æological Institute of America and the American School of Classical Studies atAthens, whose headquarters are at Cambridge, Massachusetts. All branches of archælogy and art, oriental, classical, early Christian Mediæval, and American, find a medium of utterance in the *Journal.* The Institute welcomes to its membership all men and women who desire to aid and share in the advance of knowledge concerning the past of the human race.

American archælogy has its organs in the *American Antiquarian*, the *American Anthropologist*, the reports of the Peabody Museum, the publications of the U. S. Smithsonian Institution, and the U. S. National Museum, the series of publications issued by Dr. D. G. Brinton, and the transactions of local societies.

The Museum of American Archæology in connection with the University of Pennsylvania perfected its organization by publishing its first Annual Report, Vol. I, number 1, containing list of additions to the library, catalogue of accessions, and the first report of the curator, Dr. C. C. Abbott.

The subject of archæology has taken on a vigorous growth during the current year. Professor Putnam, of Harvard University and Peabody Museum, has carefully studied the prehistoric remains in the Ohio valley. In two papers in the *Century Magazine*, especially he has given in a brief space and in a popular manner the result of his minute examinations. Professor Putnam also prepared for the World's Fair Committee a comprehensive plan for an archæological and ethnographic exhibit. Over this department Professor Putnam will preside. The researches of the Peabody Museum explorations lead Putnam to the conclusion that the mound-builder was a short-headed Southerner; that his civilization was broken up by a long-headed Northerner, and that the Indian is the result of a mixture of these two.

The Hemenway southwest archæological expedition bore its first fruit in vol. V, of the Papers of Archæological Institute of America, American series. Mr. A. F. Bandelier contributes in this volume four papers upon the history of the Southwest, to wit: (1) A sketch of the knowledge which the Spaniards in Mexico possessed of the countries north of the province of New Galicia, previous to the return of Cabeza de Vaca, in the year 1536; (2) Alvar Nuñez Cabeza de Vaca, and the importance of his wanderings from the Mexican Gulf to the slope of the Pacific for Spanish explorations towards New Mexico and Arizona; (3) Spanish efforts to penetrate to the north of Sinaloa, between the years 1536 and 1539; (4) Fray Marcos of Nizza, and (5) the expedition of Pedro de Villazur from Santa Fé, New Mexico, to the banks of the Platte River, in search of the French and the Pawnees, in the year 1720.

William H. Holmes, of the Bureau of Ethnology, publishes the result of an extended exploration in a bowlder quarry near Washington City, at Piney Branch. This site turns out to be a veritable workshop, and

a careful study of the débris leads the investigator to the conclusion that the forms occurring here are not implements at all, but failures, which the savage artisan has thrown away. Mr. Holmes has been enabled to demonstrate this by learning the stone-chipper's art and actually repeating the steps in his processes. The value of this careful exploration lies in the assistance which it will lend to other archæologists who visit to review their own work with new light.

Archæologists will be pleased to learn that the Hon. Henry Shirley found in Pedro Bluff Cave, Jamaica, a cranium belonging to one of the aborigines who inhabited the island before the European conquest. It had been artificially deformed during infancy by the depression of the frontal region, or fronto-occipital compression with corresponding lateral expansion. The island of Jamaica has yielded a remarkably small number of evidences of aboriginal occupation.

Dr. Brinton prepared for his "Races and Peoples" a scheme of geologic time during the age of man in the eastern hemisphere, which is here re-produced.

Scheme of geologic time during the age of man in the eastern hemisphere.

Quaternary Diluvial, or Pleistocene Epoch.	1. Preglacial	Europe connected with Africa. Temperature mild. African elephant in England. Tropical animals abundant.	Man homogeneous. Industry paleolithic, with simple implements. Migrations extensive. Language rudimentary.
	2. Glacial	Europe severed from Africa. Temperature low. Reindeer in France. Arctic animals abundant.	Man dividing into races. Industry paleolithic with compound implements. Cave dwellings. Migrations limited; races in fixed areas.
	3. Post-glacial	Continents assume present forms. Temperature rising. Temperate zones established.	Races completely established. Industry neolithic. Beginning of sedentary life. Languages developed in classes.
Present or Alluvial Epoch.	1. Prehistoric	Geographic conditions undisturbed. Wild animals not diminished.	Races develop into contact. Industry of stone and copper.
	2. Proto-historic	Conditions altered by agriculture. Wild animals slain or tamed.	Great migrations begin. Industry of bronze and iron.
	3. Historic	Geographic conditions greatly modified by man. All lower animals subjugated.	Extensive mingling of races. Development of nations.

—Brinton, D. G., Races and peoples. New York, 1890, p. 96.

The eighth Russian Archæological Congress was held in Moscow, January 8 to 24. It was the twenty-fifth anniversary of founding the Royal Archæological Society in Moscow, February 7, 1864. The

occasion was one of great importance both socially and scientifically, as the following list of topics will show:

(1) Pre-historic antiquities.
(2) Historico-geographic and ethnographic antiquities.
(3) Monuments of fine arts.
(4) Customs and usages in Russia.
(5) Religious monuments.
(6) Russo-Slavic linguistic and paleographic monuments.
(7) Classic, Slavo-Byzantine and western antiquities.
(8) Oriental and heathen antiquities.
(9) Archæographic monuments.

There is an excellent report of this meeting in the *Mittheilungen*, Wien (xx, 148–164).

An event in archæology worthy of record in 1889–'90 was the removal of the National Egyptian Museum from Bûlâq on the east side of the Nile to the spacious Khedival palace at Gizeh on the western bank.

The death of Schliemann removed one of the most romantic characters in the scientific world. The conception of exploring the site of ancient Troy was formed in his boyhood. His assiduity in amassing a fortune to this end, and his untiring effort to spend his fortune to secure that end have held him up to the admiration of two generations. That his interpretation of his discoveries may not be in every case correct, will not detract greatly from his just meed of praise.

Archæological publications of general interest will be found under the following titles: Aboriginal Monuments in North Dakota, Montgomery; American Antiquities, Peet (under several titles); Antiquity of Man, White (series of papers on the Warfare of Science in *Pop. Sc. Monthly*); Antiquities of Tennessee, Thruston; Archæology, Powell; Archæology of India, Führer; Archæology of Ohio, Putnam; Bronze Age, Montelius; Cliff Dwellings, Chapin, Mearns; Discoveries in Egypt, Edwards, Brugsch, Naville; Fort Ancient, Ohio, Moorehead; French Archæology, Mortillet; Gashed Bones and the Antiquity of Man, Hughes; Oriental Archæology, Sayce; Prehistoric Anthropology, Wilson; Prehistoric Cave dwellings, Bickford; Stone Age in Africa, Andree; Winnipeg Mound Region, Bryce.

VIII.—SOCIOLOGY.

In December of 1889, the American Academy of Political and Social Science was organized in Philadelphia under the most favorable auspices. The list of subscribing members reached the number of 800 in the first six months of the Academy. The most distinguished university presidents and professors are among the governing body. This coöperative action marks an era in a branch of anthropology hitherto difficult to summarize. The resources of sociological study are unlimited.

Census reports, tables of vital statistics, blue books, literature of the Bureau of Labor, of interstate commerce, of education, Johns Hopkins tracts on historical and political science; the great reviews, all of them; the daily press are only a few of the great organs of sociology. The existence of a national society with an official organ will enable the specialists to cull from this great mass the publications in his line of study.

Anthropology comes to the aid of justice in the success of the Bertillon method of measuring and identifying criminals. This has found favor not only in all France, but in the United States, and even in the Argentine Republic. To the ordinary police questions of sex, height, age, and color of the eye are added the cephalic diameters, the length of the foot, length of the middle finger, length of the ear, length of the forearm, and personal scars or individual peculiarities. The many beneficial effects of the certain identification of a criminal, in spite of all aliases and disguises that have already been published, the ability to separate the first offense from the professional villainy, are not the least among the obligations society owes to anthropology.

The discussion still continues upon the subject whether there are certain morphological indications of criminal proclivities so marked that society may use them to protect itself by confining the subject before the crime may be committed.

The wide range of inquiry in the province of sociology is indicated in the following titles: Anthropology of Prostitutes, Tamousky; Artificial Deformation of the Head, Delisle, Nicolucci; Child Marriage in India, Brahmin; Chronology of China, Gordon; Communism, Laveleye; Comparative Criminality, Tarde; Courtesy, Mallery; Crime and Suicide, Corre; Criminal Anthropology, Garnier, Galton, Garofalo, Germa, Lombroso, Paravant, Ellis, Proal; Disposal of the Dead, Taylor; Duk-Duk Ceremonies, Churchill; The Ear as a Sign of Defective Development, Warner; Ethical Problem, Carus; Evolution and Inheritance, Eimer; Gentile System of the Navajos, Matthews; Government, Huxley; Infancy of Criminals, Taverni; Infant Marriages in India, Fawcett; Japanese Women, Loti; Judicial Dictionary, Stroud; Judicial Torture, Gundry; Justice and Political Ethics, Spencer; La Couvade, Meyners; Masks, Boas, Meyer; Marriage and Heredity, Nisbet; Marriage Relation, Wake; Mutual Aid Among Animals, Krapotkin; North American Indian Children, Pajeken; Origins of Common Law, Pollock; Police Anthropometry, Spearman; Political Evolution, Letourneau; Polyandria, Raynaud; Primitive Fashions, Basu; Primitive Games, Thurn; Province of Sociology, Giddings; Racing in 1890, Stutfield; Society Among Animals, Girod; Student Life in Paris in the Twelfth Century, Francke; Survival of Ancient Custom, Gomme; Tattooing in Tunis, Bazin (also *sub voce*); Thief Talk, Wilde; Trephined Crania, Verneau; Young Parisian Criminals, Jolly, Roux.

IX.—RELIGION AND FOLK-LORE.

One of the remarkable results of coöperation in the study of folk-lore is seen in the possibility of such a work as Professor Frazer's Golden Bough. The priest of Diana, near Aricia, took office after killing his predecessor. Before doing this the candidate was obliged to break a bough from a sacred tree in the grove, identified with the Golden Bough plucked at the Sibyl's bidding by Æneas before entering upon his journey to the world below. The two questions, why was the priest obliged to kill his predecessor? and why, before killing him, was he obliged to pluck the Golden Bough? drive the author to consult the whole body of knowledge recently accumulated in comparative religion. The lower forms of animisom are quite familiar to Professor Frazer, who explored them in the preparation of his well-known work entitled Totemism.

Sir Monier Williams has placed within the reach of English-speaking people a study in comparative religion in his work on Buddhism in its connection with Brahmanism and Hinduism and in its contrast with Christianity. There is no better example of the amenability of such matters to scientific treatment than is furnished by Buddhism. At first it was not a religion at all. It recognized no spirit-world; it had no ecclesiastical organization, no places of worship, no cult whatever. Out of itself partly and in its association with surrounding religions it became, in the north especially, the most complicated and exacting of cults founded upon spirit worlds of countless number, of every variety of inhabitants intimately associated in every conceivable way with the people of the earth. The study of Buddhism is a chapter in the natural history of religion.

The American Folk-lore Society held its annual meeting in Columbia College, New York, under the presidency of Dr. Daniel G. Brinton. The report of the council gave the most flattering account of the prosperity of the organization. A movement was made toward enlarging the scope of the society's publications.

The folklorist needs no better guide than the *Journal of American Folk Lore*, edited in Cambridge, Massachusetts, by W. W. Newell. Original papers of great merit fill the body of the numbers, but reviews of current literature and a list of all publications upon the subject put the student at once into communication with his colleagues.

In the same manner the *Révue de l' Histoire des Religions*, published under the auspices of the Musée Guimet, in Paris, takes notice of all current literature on the natural history of religions. It is a guide book to this branch of science. During the current year this periodical enters its twenty-first volume. The Annales du Musée Guimet are devoted to memoirs too long and technical for the *Révue*.

Mr. Francis C. Macauley, of Philadelphia, has conceived the idea of a folklore museum. In pursuance of his suggestions Mr. Culin published a paper in the *Journal of American Folk-Lore*, and organized a

department devoted to this subject in the Museum of Archæology of the University of Pennsylvania.

Attention is called to the following titles: Aryan Cosmogony, Veckenstedt; Buddhism, Griffin, Williams; Comparative Religion, Frazer; Diabology, Jewett; Evolution of a Sect, McGee; Folklore, Newell; Humanities, Powell; Mythology of the Menomoni, Hoffman; Natural Religion, Müller; Polytheism in China, Lyall; Prayer Among the Hindus, Roussel; Primitive Religion, Schurtz; Religion of the Semites, Lloyd; Taoist Religion, Benton.

X.—MAN AND NATURE.

Prof. N. S. Shaler published a series of papers on America in its relation to civilization, including aboriginal life as well as that of the white race. One of the most interesting chapters in this study is that which relates to the change from agricultural to hunting life wrought in the aborigines by the invasion of the buffalo; or, rather, it might be called the reciprocal action of buffalo and Indian. The burning of forests encouraged the growth of grass; this invited the buffalos; they enticed the farmer from his stone hoe and laborious husbandry to take up the spear and the bow. Meat was easier to procure than corn; furthermore, the buffalo destroyed the corn and left the farmer nothing else to do but to pursue the occupation of Nimrod.

M. Marcelin Boule brought together in *L'Anthropologie* (I, 89–103) a series of reviews on quaternary geology in its relation to the antiquity of man. This list includes Forsyth Major, on the Mammalian fauna of the Val d'Arno (*Quart. J. Geol. Soc.*, Lond., XLI, p. 1); A. J. Jukes-Browne, on the Bowlder clays of Lincolnshire (*id.*, 114); Aubrey Strahem, on the Glaciation of South Lancashire, Cheshire, and the Welsh Border (*id.*, XLII, 369); R. M. Dilley, on the Pleistocene succession in the Trent Basin (*id.*, XLII, 437); J. Prestwich, on the Date, duration, and conditions of the glacial period, with reference to the antiquity of man (*id.*, XLIII, 393); T. Mellard Reade, on An estimate of post-glacial times (*id.*, XLIV, 291); Rev. O. Fisher, on the Occurrence of elephas meridionalis at Dewlest, Dorset (*id.*, XLIV, 818); J. R. Kilroe, on Direction of ice-flow in the north of Ireland (*id.*, XLIV, 827); James Croll, on Prevailing misconceptions regarding the evidence which we ought to expect from former glacial periods (*id.*, XLV, 220); J. Prestwich, on the Occurrence of palæolithic implements in the neighborhood of Ightham, Kent (*id.*, XLV, 270); Henry Hicks, on the Cac Gwyne Cave, North Wales (*id.*, XLIV, 561).

BIBLIOGRAPHY OF ANTHROPOLOGY, 1890.

Aarboger for Nordisk Oldkyndighed og Historie, udgivene af det Kongelige Nordiske Oldskrift-Selskab. Kjöbenhavn, vol. v in 1890.

ABBOTT, C. C. Exhibition of a bone image from Livingston County, N. Y. Am. Ass. Adv. Sc.

——— Exhibition of gold beads of Indian manufacture from Florida and New Jersey. Am. Ass. Adv. Sc. First annual report of the curator of the Museum of American Archæology in connection with the University of Pennsylvania. Phila. By order of the council. Vol. 1, No. 1, 54 pp.

ABBOTT, EDWIN A. Illusion in religion. Contemp. Rev., Nov., 721–742.

ABERCROMBY, JOHN. The first mention of gypsies in Finland. J. Gypsy Lore Soc., Edinb., II, 73–74.

——— Magic songs of the Finns. Folk-Lore, London, I, 17–46.

ACHELIS, A. Die Geschlechtsgenossenschaft und die Entwickelung der Ehe. Ztschr. Gesellsch. f. Erdkunde. Berlin, 302–316.

ACHELIS, TH. Ethnologie und Geschichte. Das Ausland, Stuttgart, LXIII, 548–552, 566–570.

——— Ethnologie und Philosophie. Das Ausland, Stuttgart, LXIII, 744–751, 811–814, 830–834, 1007–1010, 1026–1030.

——— The science of ethnology: its history, development, and method. Open Court, Chicago, IV, 2312–2316.

Actes du Congrès international des œuvres et institutions feminines. Paris. 539 pp. 8vo.

ACWORTH, H. A. On the Tulsi plant. Journ. Anthrop. Soc., Bombay, II, 109–112.

ADALET. A voice from a harem. Nineteenth Cent., Lond., XXVIII, Aug.

——— Life in the harem. Nineteenth Cent., Lond., XXVIII, Dec.

ADAM, LUCIEN. Arte de la lingua de los Indios Antis o Campas. Paris: Maisonneuve. 118 pp. 8vo. (No. 13 of American Linguistic Library.)

ADAMS, CHARLES KENDALL. Recent historical work in colleges and universities of Europe and America. An. Rep. Am. Hist. Assoc., Wash., 19–42.

ADAMY, R. Zwei hugelgräber des vogelsberges. Ergänz. z. Ztschr. f. Ethnol., Berl., I, 55–59.

ADLER, CYRUS. Oriental customs of courtesy. Am. Anthrop., Wash., III, 387, 388.

AGASSIS, M. L'ile de Java. Bull. Soc. de Géog. de Lyon, IX, 129–216.

Africa. West African tribes at Paris Exposition, 1889. (*See* L'Anthropologie, I, 257.)

AIDÉ, HAMILTON. Manners and customs of Sicily in 1890. Nineteenth Cent., Lond., XXVIII, Oct.

——— Was I hypnotized? *Ibid.*, April.

ALLEN, G. Sacred stones. Fortnightly Rev., Lond., n. s., XLVII, 97–116. (*See also* Andrew Lang, 10 March.)

ALIX, E. L'esprit de nos bêtes. Paris. 656 pp. 8vo.

ALLEN, HARRISON. A clinical study of the skull, delivered May 29, 1889. Smithsonian miscellaneous collections, 708. The Toner lecture, X, Washington. 81 pp. 8vo.

ALLEN, WILLIAM F. A short history of the Roman people. Boston, Ginn & Co.

ALSBERG, MORITZ. Das recht im völkerleben. Das Ausland, Stuttgart, LXIII, 965–967, 986–989.

D'ALVIELLA, Count G. S. The migration of symbols. Pop. Science Month., N. Y., XXXVII, 778–787.

AM UR-QUELL. Monatsschrift für Volkskunde, Wien. Vol. I, 1890. Ed. Friedrich S. Krauss.

American Anthropologist. Organ of the Anthropological Society of Washington. Vol. III, 1890. By the Society. Quarterly.

THE YELLOW RACES.[1]

By Dr. E. T. Hamy.

Last year's course was mainly devoted to the study of that large group of peoples which are collectively known by the name of Yellow Races, although their color forms a chromatic scale, which at times is perceptibly removed from what is properly called yellow. This group of races, this main stem (trunk), to borrow a happy expression imported into science by M. de Quatrefages, is, numerically speaking, the most important of all those the great whole of which might be considered as the human forest. In fact, the number of yellow men could not, properly speaking, be estimated at less than 540,000,000; this is more than one-third of the whole number of mankind,[2] and I ought surely not curtail the study of so important a fraction of the human family, although I must acknowledge that the precise facts concerning the yellow races are as yet far from sufficient.

With a very few exceptions, our anatomical data are in fact only isolated documents. Our numerical observations, our special photographs, are few in number, and the conclusions drawn from the examination and the description of such indifferent materials must consequently be looked upon as eminently provisional only.

Such as I had formulated them quite recently, I have been compelled, after many fruitless efforts, to present them to you once more in this course of instruction, where one after the other, and in systematic order, each human group becomes the object of special inquiry, founded above all upon scientific investigation. And I have been very fortunate to find that, on the whole, my conclusions are not opposed by any opinion maintained elsewhere, and that, making full allowance for outward appearances, they still have nothing that could possibly shock the professional Orientalists, who are accustomed to use for the most ordinary purposes only linguistic characters.

The first observation which we have been called upon to make, as we enter into this subject, has reference to the relative antiquity of the

[1] Opening lecture of the course on Anthropology, held at the Museum on March 23, 1895. Translated from L'Anthropologie, 1895, Tome VI, No. 3.

[2] H. Wagner and A. Supan estimate the population of the earth at about 1,480,000,000. (Die Bevölkerung der Erde, VIII, Gotha, 1891, 4to, p. xi.)

yellow races in a widely extended area. There are indeed certain facts which justify us in supposing that one of these ancient, but now extinct races, knew the vanished mammalia of the valley of the Rhone, and that other old Mongolians lived in the east of Europe and in Upper Asia at a certainly less remote, but still very ancient epoch.

Restricted from the beginning to a rather septentrional habitat, the yellow peoples remained unknown to the ancient Egyptians until the time of the invasion of the Shepherd race, certain leaders of whom, depicted on the monuments of Sân or the Fayoum, bear truly Mongolian features. In Mesopotamia they may have furnished the elements of one of the two ethnical groups which in the dawn of history competed for preeminence under the names of *Accad* and *Sumer*. Accad, whose language is akin to the so-called *Turanian* idioms, ruled at Babylon, and displays on the few monuments on which its image is preserved very striking features.

The Mongolian features continue a process of exaggeration on certain more recent figures, where we see, as, for instance, at Behistun, among the prisoners of Darius, genuine Mongols with turned-up noses, delicate mustaches, high and prominent cheek bones, etc. Still other Mongolian faces are represented in the famous ruins of Sanchi (Malva), etc. We must, nevertheless, come down as far as Attila's invasion to collect some fragments of description, in which the Hun may appear with increased horror, owing to the fright with which he had filled the Christian world. Forma brevi, lato pectore, capite grandiori, minutis oculis, barba rara, simo naso, tetro colore, originis suæ signa restituens—thus writes Jordanes, describing Attila himself.

Many other historians, both Eastern and Western, have since that time depicted the immigrant hordes who passed through the breaches made by the Huns and opened for themselves a road to the very heart of the Empire: Avars, Chazars, Komans, and those Hungarians and Bulgarians, the fathers of the ogres of our legends, the bugaboos of popular speech. None of these portaits is more striking than that which is inserted by Mathieu Paris in his Grande Chronique. The clerk Yvon, of Narbonne, wrote from Neustadt, in 1243, to Girauld, archbishop of Bordeaux, to inform him of the devastations of the barbarians, and thus described these invaders, who became ever after known under the name of Tartars:

"Their breast," he says, "is solid and robust, *habent autem pectora dura et robusta;* their face is lean and pale, *facies macras et pallidas;* their shoulders are straight and high, *scapulas rigidas et erectas;* a short and turned-up nose, *nasos distortos et breves;* the chin is prominent and pointed, *menta prominentia et acuta;* the upper jaw is low and deep, *superiorem mandibulum humilem et profundum;* their teeth are long and few, *dentes longos et raros;* the eyelids hang from the eyebrows down to the nose, *palpebras a crinibus usque ad nasum protensas;* their eyes are mobile and black, *oculos inconstantes et nigros;* their look is a sideway and fierce look, *aspectus obliquos et torvos;* their extremities are all bone and nerve, *extremitates ossosas et nervosas;* finally, their thighs

are big, but the legs short; in stature, however, they are our equals, for what may be wanting in the legs is made up in the upper part of the body, *crura quoque grossa, sed tibias breviores, statura tamen nobis æquales; quod enim in tibiis deficit id in superiore corpore compensatur.*"[1]

This portrait of the Tartar, drawn by Yvon, of Narbonne, is very remarkable in spite of its exaggerations and mistakes.

It shows, in fact, how the attention of the observer was at that time called to some of the principal features of that exceptional morphology which make of the true Mongol one of the fundamental anthropological types. From that time on Europeans, missionaries, merchants, etc., who shall approach the mysterious countries of the East will collect impressions less and less limited, less and less vague. And if in their reports they still continue to confound in one and the same great body races which have since been found to be infinitely varied, they will at least gradually establish a kind of general grouping, a first essay at coordination, which later on will lead to a rational classification.

Bernier is a fair representative of this phase of Asiatic studies in his famous letter, "On the different varieties of races of men," inserted in the Journal des Savants of 1684. "The third variety," he says, after having spoken of the whites and blacks, "the third variety comprehends a part of the kingdoms of Arakan and of Siam, of the islands of Sumatra and Borneo, the Philippines, Japan, the Kingdom of Pegu, Tonquin, China, Cochinchina, Tartary, which lies between China, the Ganges and Moscovia, Usbeg, Turkistan, Zaquetay, a part of Moscovia, the Little Tartars and the Turkomans, who live on the banks of the Euphrates toward Aleppo." "The inhabitants of all these countries," adds the illustrious traveler, "are really whites, but they have broad shoulders, flat faces, a small, crushed nose, small pig eyes, long and deep sunk, and three hairs for a beard."

This third variety of men of Bernier's is almost exactly the yellow trunk of modern anthropologists. The Americans alone are wanting, because Bernier with his imperfect knowledge of them did not see in them a sufficiently great difference to warrant making of them a special variety that would differ from ours. Mongols and Turks, Indo-Chinese, Japanese, and Malays are here all of them put into one and the same mold, which is to be broken up only much later by ethnologists, linguists, and anthropologists.

The names of Pallas, Castréro, Baër, and many others recall the vigorous efforts made for more than a century now to introduce a little order into Mongolic studies. The linguists insist upon it that we should not mix up in one and the same great whole people who speak monosyllabic languages and others who use the agglutinative system. The ethnologists also find it easy to show clearly the profound divergences which result from entirely different social systems, as from entirely

[1] Mathæi Parisiensis, monachi Sancti Albani, Chronica major, edit, by R. Luard, Vol. IV, 1877, in 8vo.

different moral codes. The anthropologists finally claim the great importance of physical characteristics which are now studied for this purpose, with the aid of exact instruments, applied to living subjects as well as to skeletons. And from the coordination of all these combined studies there results a classification, which no doubt will yet have to undergo important changes, but which already, and however insufficient it may remain as yet, may give to instruction on this subject the frame work, so to say, which it needs, even though it be only provisional.

It is no longer sufficient, in fact, as it was for Buffon, to compile the reports of travelers and to put them side by side in geographical order. Now, those descriptions which have become more accurate and more scientific must be presented in the most logical connection that is possible, and the characteristic features must appear subordinated in natural succession. It is only by applying these principles that we have succeeded in combining a classification which, before going any further, we deem it proper to present here in a summary arrangement.

Let us first of all recall the fact that we began by putting aside provisionally the American and the Malayan races, for a complete study of which this year's course will hardly suffice. Having thus gained more space for our purposes, we have set aside eight fairly kindred subjects, which are more or less voluminous, more or less ramified, which we will for the present mention by the names of Mongol, Turk, Indo-Mongol, Aleut, Tungus, Aino, Chinese, and Eskimauan.

The first is the properly so-called Mongolian branch, which has occasionally, by a mistake, given its name to the whole family, and which, on account of the exaggerations of all kinds that flourish concerning the subdivisions of which it consists, well deserves to occupy the first place at the head of our group. The word which designates it (Mongkou), and which means brave, bold, generous, is, however, the name of that fraction of the Chi-houéï to which Gengis Khan belonged, which sufficiently explains the part that such a name has played and still plays in the nomenclature of races.

The Mongolians constitute a mass of 2,000,000 to 3,000,000 souls almost all of whom dwell between Siberia and China, Manchuria and Turkestan; they are actually subdivived into Eastern Mongolians, the most numerous of whom, the Khalkas, are sometimes called Exterior Mongolians (the Interior Mongolians form the tribes Chakhan, Ourote, Ordo, etc.); Western Mongolians, called Kalmuks by the Turks, and subdivided into Songares or Tchoroses, Derbethes, Torgotes or Targoutes, and Khochotes or Khochooutes of the Ala-Chan, and finally Bouriats, sometimes called Northeastern Mongolians.

To whichever group they may belong, these Mongolians are, as I have said before, the most marked of all yellow men; they exaggerate all their characteristic features to such a degree that in endeavoring to sketch the points that specially distinguish them, we have been able to form, as it were, a kind of large canvass, on which, afterwards, all our other Asiatic designs could be fitted, one after the other.

We have at the very first microscopically examined their hair, the most liotrichian that can be found, circular in form, at the same time very coarse, very black, very stiff, and very hard. We have analyzed the elements of that only slightly pigmented skin in its shades varying from citrine white to yellowish or reddish brown. We have next tried to explain to ourselves the morphology of those so-called bridled eyelids which are so characteristic of the race, and we have found, with Siebold, that they owe their peculiar aspect to a cutaneous fold which masks the corner of the eye until it makes the lacrymal caruncle invisible and covers the inner third of the tarsus cartilage, and to a thickening of the same cartilage under the upper eyelid, which covers and half hides the lashes. The opening of an eye thus "bridled" is curtailed, triangular, and often even oblique. We have found that these peculiar appearances of the Mongolian eye are independent of the facial skeleton, since there are in existence very many Asiatic subjects—I have exhibited several to you—in whom a nose of very great elevation and cheek bones very closely resembling our own may coexist with the most strikingly deformed eyes that could possibly be found in Mongolian countries.

The study of the skeleton has shown us that the Mongolian skull is hyperbrachycephalous; its cephalic index exceeds 87; it is a genuine Mongolian skull, which, for the present, represents the extreme limit of brachycephalism, free from deformity, with the index 98, 21 (Huxley). Shortened, enlarged, and at the same time elliptical, it is perceptibly less high than broad, and well deserves the name of platy brachycephalous, which I have recently bestowed upon it.[1] The face is in perfect harmony with this low skull, expanded transversely; it looks like a more or less shortened lozenge. The external orbital apophyses, long and divergent, form a connection with cheek bones of coarse nature, with angular cheeks pressed back on the outside by upper maxillaries of an exaggerated size. Turned down, forward and outward, these cheek bones, at the same time that they bend in a right angle upon their upper and inner edge so as to give to the orbit its remarkable breadth, overreach below in a characteristic projection on which Pruner-Bey has often very justly insisted. This is what he called the daylight orbit (orbite à jour); a part of the orbitary edge becomes really visible in the vertical direction. The Mongolian skull is, moreover, generally phœnozygous; in other words, seen from above it shows its zygomatic arch more or less removed and convex. The maxillaries, which are transversely flattened, become rather hollow at a level with the canine cavities and afterwards develop largely, both transversely and upward. The nasal orifice, which they surround, is quite large, but at the same time very much elongated, and the indication which a comparison of these two dimensions gives is platyrrhinian. The bones of the nose, properly speaking, rise in a prominent ridge, and thus trace in the very center of the facial lozenge a quite characteristic relievo.

---

[1] Crania Ethnica, p. 402 and foll.

The dental arch is hardly prognathous, below the nasal aperture, to which it frequently adheres in an oblique slope which dispenses with the sharp edge of the prenasal vestibule. This arch is, however, large, short, almost semicircular, and is armed with teeth which present nothing remarkable, neither as to size nor as to shape.

The rather low, very powerful mandible is remarkable for the angular aspect of its symphysis, and of its posterior angles, which are prominent, often extroversated, and which extend on either side in a kind of voluminous heel.

To assist me in this description, I have placed before you some very striking specimens recently brought home from Mongolia by Dr. Ernest Martin, and by placing by the side of these skulls from Eul She Sou Go, some Turkish, Annamite, Chinese skulls, and others, I have given you from the beginning of my demonstration a very precise impression of the large polymorphism of these races, which, though so varied among themselves, are habitually confounded in a veritable amalgam.

All the other characteristic features peculiar to the Mongolians have been examined with the same attention as the anatomical features. In this summary I shall not return to what I have told you at that time of their intellectual and moral nor of their social and religious peculiarities. Availing myself of the descriptions given by the best indorsed writers, I have endeavored to show you the most perfect picture of the life on the steppes, and certain photographs, with a visit to the Guimet Museum, have fortunately come to the assistance of my very unsatisfactory descriptions.

What I have thus done for the true Mongolians, I have next done for the Kalmuks, assisted by a good monograph by M. Deniker for the Bouriats, with the aid of divers documents collected by Messrs. Malieff and Bogdanoff, and we have thus been enabled to recognize how this last race of men, who of all Mongolians assimilated most easily, have in our day most essentially changed in consequence of their repeated alliances with their masters, our friends the Russians.

The second branch which we had to examine was that of the Old Turks, very much nearer to the source from which the Mongolians sprang than they have remained since, but one branch of whom, separated from the others by the great invasions toward the close of the Middle Ages, has in part preserved their archaic aspect. These Northern Turks are the Yakuts, permanently settled to the number of 200,000 souls, as this map shows, on the banks of the lower Lena, and they show us in several tribes, especially in those called Utsha, Cheta, etc., to judge by Middendorf's arguments, very striking Mongolian affinities.

The other Turks (perhaps 20,000,000 souls), those whom we call Turkomans in our works on history, and whose daring invasions into Europe and into Africa have wondrously enlarged their original domain, are

much more mixed, and it is only from the countries whence they drew their historic origin that we can learn something of their character. With Baron de Bode and Colonel Duhousset we have visited them south of the Caspian Sea, under the name of Yamouds, Goklanes, etc., in the Caucasus under the name of Abreks, and we have been able to ascertain that the few practical observations made among these tribes coincide very exactly with those suggested by the Yakuts, their northern near relatives. In examining the skulls of the Turkomans, it becomes, however, necessary to bear in mind that certain of their tribes, and especially the Kurds and the Bakhtyaris have a peculiar custom; they deform the head by exaggerating the parieto-occipital flattening which is common to all Turks, a kind of natural curtailment, which almost constantly presses the top of the skull into a point behind.

This very habitual and very visible distinctive feature at once enables us to establish between the Turks and the Mongolians an immediately perceptible difference. There exists a second that is still more striking, and which, combined with the first, gives to the skull capsule of the Turk, whether he be a Yakut or a Turkoman, a cuboid aspect. This is the tendency of the head to develop upward, consequently just in the opposite sense to the vertical flattening of the Mongolian.

The Turk's head is, therefore, both taller and shorter; it is also a little less large in proportion, and the cephalic index is only subbrachycephalous. The face, adapting itself as is natural to the skull, which is thus slightly curtailed, is less open; on the other hand, the nasal skeleton is even more pronounced in the Turk than in the Mongolian, and you have been able to notice in some Ansariehs, for example, truly amazing instances of large noses.

Before leaving the Turkish branch, we had to examine long lines of types lying intermediate between the Turks and the Mongolians, such as the Uzbeks, the Kirghiz, the Bashkirs, the Nogaïs; between the Turks and the Finns, such as those extremely mixed subjects of the governments of eastern Russia, whom the reports of travelers erroneously designate without distinction as Tartars; finally, between the Turks and the Caucasians, the Slavs, the Greeks, even the Arabs, the Osmanlis of Constantinople, Kourouglis of Algiers, etc. We proceeded from one race to the other by insensible transitions, and we were thus able to appreciate the extreme difficulty which continually confronts us in separating scientifically the yellow men from the white men. We should meet with the same embarrassment if we went farther north in the course of similar inquiries. The lowlands of western Siberia are in the higher northern latitudes overrun by races like the Samoyedes, Kanirs, and others, among whom the individual varieties are really very extensive, and lead, almost without a break, from the Mongolian to the Lapp. Elsewhere in the same zones intermediate types produce other almost imperceptible transitions from the Lapp to the Finn, and from the Finn to the Slav. We are thus able to establish unbroken lines of observation

between the most exaggerated of the yellow men and certain unmistakable white men. It is these transitional populations, if I may call them so, which Prichard, in his desire to designate them by a single collective name foreign to that great western body which he calls Indo-European, had proposed "for the present" to call Allophylian races. Thus he would have fused together, under a perfectly vague appellation, groups as thoroughly distinct, for example, as the Basque, the Finns, the Tschudes, the Ugrians, the Samoyedes, the Ostiaks, and all those East Siberians collectively known under the name of Paralians, etc., a kind of enormous rising en masse of the incerta sedis of the Old World ethnology. These Allophylians of Prichard, however provisionally only the famous author of the Physical History of Mankind may have wished to introduce them, have not yet entirely disappeared from the language of anthropology. Some special writers have retained them faithfully. It can, however, easily be seen that they are losing ground every day, and in some of last year's lectures you may have noticed that careful studies methodically pursued have perceptibly diminished the geographical area of populations which till then had been relegated into the *caput mortuum* of ethnological analysis, because they were not known at all or only very vaguely known.

But let us return to the series already classified, and having got rid of Mongolians and Turks, let us pass on to the races of the Himalaya, their southern and southeastern neighbors, grouped by Prichard under the name of Indo-Tartars, and whom, on account of their geographical position and of their affinities, we think it would be more proper to call Indo-Mongolians.

As far as scattered and incomplete observations will permit us to judge, these people are in almost every aspect intermediate between Turko-Mongolians and Indo-Chinese. In Tibet, where they call themselves Bhôt, they show themselves to be near akin to the Mongolians, with their high cheek bones, "bridled" eyes, and straight noses, which are sometimes even convex, and in certain individuals sufficiently developed to remind us of the redskins of the prairies of the American Plains of the Great West. Their skull is subbrachycephalous. This type, very sharply marked on the high table-lands, gradually becomes less decided as we descend into the lowlands. The crossings, which gradually absorb it, are, moreover, of a greatly mixed nature, borrowing here even from a more or less white race, and there from Dravidians or Kolarians. In Assam, especially, our Indo-Mongolians have contracted alliances with certain tribes of mountaineers, of whom we shall have to say more after the first lectures of this year's course—men who are very marked representatives of the Indonesian element, and who will furnish the subject of our first studies in the ethnology of the Malayan races.

In Indo-China, as at the foot of the Himalaya, there are here and there in the most elevated parts of the country small agglomerations of

evidently Indonesian origin. There are here also, but in vastly larger numbers in Cambodia and the Tsiampa, descendants of ancient Hindoo immigrants. Finally, there exist, especially in the south, a few small tribes of Negritos.

All the remaining population, Birmans, Thaïs or Siamese, Annamites, is bound up with that of Upper Asia, of which we have spoken before, so that they all form a tolerably homogeneous totality, which approaches the Tibetan very nearly. This Indo-Chinese type, subbrachycephalous like the Tibetan, is subdivided into Burmah or Birman, Thaï, and Annamite. We have studied these three groups, one after the other, and we have followed their progress downward from the mountains to the deltas of the rivers, the basins of which they now occupy. A primitive, fairly homogeneous population, of which we shall have to speak again presently, at first occupied these lowlands; these people had, however, to give up the parts adjoining the great water courses to invaders of a different origin, who have gradually reached the south.

Some of these imported into the Eastern Peninsula elements of a civilization which was evidently borrowed from India. I have endeavored to present to you as complete a history of it as was possible, and we have studied together with the greatest carefulness the admirable monuments of their power and their art which they have left us in Cambodia and the Tsiampa. Others were those Burmans, those Thaïs, (Siamese, Laotians), those Annamites, whose fierce conflicts with Tsiampa and Cambodia we have followed from the beginning of this bloody quarrel to the French occupation, which has saved the last remnant of the Khmer people from utter destruction. I paid special attention to the study of those ethnical elements that are peculiar to the lands which we possess in the extreme East; and the examination of the characteristic features of all kinds, which are noticed among the former and the present inhabitants of the lowlands of the Me-Kong and the Song-Koi, has detained us a long time. I was specially interested in proving their perfect ethnical independence, as far as their northern neighbors, the Chinese, are concerned, although they were their masters long enough to impose upon them their mode of writing, their system of mandarins and many other things, but whose supremacy has never succeeded in altering, in any way whatever, the ethnical characteristics of their subjects. The Annamites, who have been thoroughly studied, as a race, in French Cochin China and Tonquin, have undergone no external modifications that could be ascribed to these intermarriages. To say the most, there have been found among the Tonquin people some taller and mesaticephalous people, a fact which has been ascribed to the intervention of Hôs, immigrants from China, who were taller in size and longer of skull. In the Eastern Peninsula, as everywhere else, the Chinese who marries a native woman finds that the offspring of this union, Minh-Huong, reproduces the features of the mother. At

Saïgon, as at Batavia, Manila, etc., grandchildren retain next to no mark of their grandfathers.

In the pursuance of our investigations, and while getting gradually farther and farther away from the initial Mongolian type, we have examined in its minutest details the Indo-Chinese or Trans-Gangetic branch; then we have analyzed two other groups of races, of far less importance, and which, before my own researches, had never been thought of as constituting small ethnical groups of their own.

The first of these small branches, broken off, if we may say so, from Prichard's allophylous bush, comprehends the majority of the populations of the northeastern coasts from the Sea of Okhotsk to the peninsula of Alaska, Koriaks, Kamchadals, Chukluks, Chukchis on the shores of Asia, Aleuts, or Ununguns in America, on the islands and at the point of the peninsula, which constitute this ethnical group of 25,000 men at best, imperfectly bounded no doubt, especially eastward, but existing beyond all doubt. It is interesting to ascertain that the geographical area of this group, which until now has had no name of its own, exceeds the size of the Continent of Asia and very evidently encroaches upon the New World. We shall later on meet with other similar facts, which, we are convinced, will not fail to throw a certain light upon the fact that the majority of the tribes of the New Continent owe their origin to Asiatic ancestors.

However this may be, we place systematically after the Tibetans and the Indo-Chinese, who are subbrachycephalous, the Chukluks, whose average indication, 79.9, stands at the extreme limit of mesaticephally, and not far from them, the Tungus-Manchu (300,000 individuals), another breaking up of Prichard's "Allophylians," with their clearly mesaticephalous skull, which is at the same time excessively flattened. This is, I repeat, an entirely systematic process; we shall be justified in pursuing it, since it has enabled us to avail ourselves of the only characteristic features which are known with tolerable accuracy, the anatomical features. For they alone permit us, thanks to their clearly pronounced nature, to form a small, quite solid group, which may later on serve as a starting point for new efforts at classification. The whole of this remotest Siberia, the whole of this grand northern China, are territories overrun by small agglomerations of Nomads, which are usually only known by a few, rare photographs and a few tools seen here and there in collections. There are certainly among them some who, according to Pruner-Bey's expression, establish a connection with the boreal American. The Ghiliak of the Trans-Amour appears thus like a kind of intermediary between the Tungus and Inuit or Eskimo.

This last group, which contains 27,000 to 28,000 individuals, constitutes an ethnical whole of its own, relatively quite homogeneous, which once more presents to us the sight of a race having one end of its habitat in Asia, but having slowly reached, all along the boreal

ocean, the extreme northeastern part of the New World, Greenland, at the very time when it sent forth its most advanced tribes to reach the Falls of Niagara, though without going beyond them. I have here only briefly indicated the most essential features in the history of these Hyperboreans. It seemed to me more convenient to give you a detailed account of these various groups when I should present you the other natives of the far north of America. I do not, on that account, attach less importance to the ideas which I have always maintained as to the position which ought to be assigned to the Eskimos at one end of the line, of which the Mongolians occupy the other end. They are the true dolichocephalous members of Mongolism, as I shall show you in a few days. In the order of campaign which we have adopted they are separated from the Aleuts, with whom quite recently M. Virchow confounded them, by the Tungus-Manchu, whom we have just slightly reviewed, and by the Chinese, whom we shall yet have to investigate rapidly, so as to make an end of our studies as far as this whole great yellow host is concerned.

The Chinese, who are the most numerous of all yellow races (the least exaggerated numbers still give to China a population of more than 300,000,000), differ decidedly from all the other Asiatics whose essential features I have recalled before. Their hair, their complexion, their eyes, it is true, do not present any very decided peculiarity, but the bones of the skull and of the face offer forms and proportions which are not met with outside of what might be called the zone of Chinese influence.

Von Baër, who was the first to call attention to this special morphology of the Chinese head, expressed himself in a very picturesque manner when he tried to describe it. He had spoken of Buriat and Kalmuck skulls. "Imagine," he added, "you had the mold of a Kalmuck skull, made of some elastic material, such as gutta percha, and you were to compress with both hands the two sides of the top so as to make the brow rise and the top of the head and the occiput to stand out more boldly; compress then," he added, "the zygomatic arches so as to make them narrower and so as to cause the jugal bones, and especially the maxillaries, to appear in profile toward the front, and you will have the Chinese type."

The skull of the Chinese is, in fact, both longer and higher in proportion than those of all other yellow men. His cephalic index falls down to subdolichocephalism (the average indication of 142 skulls of the two sexes=77.24) and its height slightly exceeds its width. The face, harmonizing completely with the skull, is always of medium dilatation, with high and prominent cheek bones, and jaws which protrude in narrow and lengthened prognathism.

All true Chinese, whatever their origin may be, maintain more or less strictly the osteological type that I have here defined. No doubt the external features vary at times, vary very greatly, indeed; the

complexion, for instance, which at the north is white with a tinge of citrine, may at Canton darken to a deep brown; the almost horizontal eye may change into one more or less oblique; the nose may become flatter or be raised higher; the face may change to one more ample and more massive; the figure, the corpulency may undergo serious changes. But beneath all these external variations the osteological type always continues most tenaciously, and the anthropologist may ascertain that the collections of heads preserved in France, in England, in Holland, or elsewhere, give the same measurements with unfailing constancy.

The morphological changes are, therefore, all on the surface, and the absolute uniformity of the skeleton is complemented by a corresponding identity of costume, manner of walking, etc. This vast nation, the first in the world in point of numbers, is almost entirely subject to common usages and identical manners. The queue, which the conquering Tartars compelled them to wear in the seventeenth century, dangles now on the back of all Celestials, and the long nails, protected by metal sheaths, are at the south as at the north symbols of idleness and wealth. On the other hand, the custom of deforming women's feet, so characteristic in central China, has never been adopted by Chinese women in the south, and the wives of Manchus, the princesses of the now reigning Imperial family especially, have feet like everyone else.

We have given very special attention to these various ethnographic peculiarities and we have left the Chinese only after having summed up as exactly as it could be done all that can aid us in improving our knowledge of this people, of their intellectual manifestations as well as of their physical appearance.

I have taken especial pains to trace the history of their legendary migrations, starting from the northwest, and to show you how the first occupants of the lowlands near the great streams of the east were driven back, step by step, toward the mountain regions of the south and southwest, where we shall meet them again under the name of Lolos, of Miao-tsé, etc., in our search for the cradle of the Indonesian tribes.

I have as yet said nothing of Korea, which was so long looked upon as a simple annex of China; nor of Japan, which ethnologists quite recently considered only another Cochin China.

The Koreans and the Japanese belong without contradiction, at least up to a certain point, to the great mass of peoples of the yellow race. The Koreans, whom I have shown you in photographs, used so greatly to resemble Tibetans, that they were often mistaken the one for the other; but there are others who make the impression as if they were the offspring of intermarriages, and more than one modern traveler, unable to explain some national variations that might be called out of order, has brought in the most unexpected elements to account for

these strange mixtures, from the Aleutian (Chaillé-Long-Bey) to the Turk himself (Varat).

As to the Japanese, the immense anthropological collection (54 skeletons, 403 skulls, 27 pelves, etc.), sent to the Museum by M. Steenackers, shows the superabundant multiplicity of their various sources. It can hereafter no longer be doubted that the population of the Archipelago of the Rising Sun is connected by bonds of kinship with its neighbors on the Yellow Continent. But it is also becoming more and more certain, that some southern elements have played a very important part in their history as a nation. The Malays (to adopt a very general term), whose fleets ravaged the coasts of Tsiampa as late as the eighth century, had at times previous to that a powerful influence on the northern islands, and have left behind them numerous traces of their intervention. I shall take pleasure in seeing the ingenious and varied arguments brought to light by which M. Metchnikoff supports the very precise views which he has formed on that subject.

One last national element, which has remained very modest in its influence, because it was driven out with a kind of repugnance, by the Japanese, is the Aïno, the hairy race of Kuriles, of Sakhalin, and of Yeso. I have told you what little I knew of these singular islanders, whom for the moment I am utterly unable to classify. The Aïnos are, on an average, akin to the Chinese by their cephalic index, and I have provisionally placed them between the Chinese and the Eskimo, whilst most readily admitting that this classification is altogether provisional only.

Of the different branches of the yellow trunk, whose general physiognomy I have placed before you, those that could be gathered together in a tolerably homogeneous group without doing much mischief, have thus been passed in review. There remain to us to be studied a certain number of others, more or less irregular, and who, since Blumenbach, have been generally set apart under the names of the Malay branch and the American branch. This year's course of lectures will be devoted to the examination of documents of all kinds relating to these two branches.

We shall pass in review, successively, the material referring to the Korean and the Japanese races, considered in the light of intermediaries between those of the Asiatic Continent and those of the large islands which are dependent on them. Next we shall approach the facts which have reference to Malay land and its ethnological connections, Madagascar on one side, Polynesia and Micronesia on the other. This first series of studies will bring us to Easter. After vacation we shall begin the study of the races of the New World, which will occupy the whole remainder of the course.

COMPULSORY MIGRATIONS IN THE PACIFIC OCEAN.[1]

By Otto Sittig.

The fact that the first voyagers around the world found all the archipelagoes in the Pacific Ocean inhabited as far as Easter Island in the extreme east appeared to present an indecipherable enigma to anthropogeography, and although the remarkable skill of the Oceanic peoples in swimming, and the high degree to which they had developed the art of navigation were known, even these did not afford adequate connecting links for the origin of these islanders. Therefore, the first opportunity of considering the question with a prospect of success was afforded when instances of longer voyages, which exceeded the distances ordinarily traversed, became known and—this is the main point—also the fact that they occurred involuntarily. In connection with their accounts of such voyages, most travelers have expressed an opinion concerning the origin of the inhabitants of Polynesia. The view that they were indigenous to the soil met with no permanent approval, since from the very beginning there has been a conviction that there is a relationship not only between the Polynesians, but also between them and the inhabitants of the Malay Archipelago, and the idea of indigenous origin is on the whole mythical, so far as our knowledge of the people is concerned. The theory of their derivation from the islands southeast of Asia is therefore strenuously defended. But the opposite opinion, which assumes America to be the starting point of the population of Polynesia, is also mooted and finds its principal champion in Ellis. This view denies the possibility of a derivation of the Polynesians from the west, since the prevailing winds and currents move in that very direction and, moreover, there is no lack of ethnographical points of resemblance between the people mentioned and the original inhabitants of America. Of minor importance, in our consideration, are the individual opinions of Bary, Lesson, and, later, Quatrefages, who attribute the origin of these islanders to New Zealand.

The purpose of the present article is to make the most complete compilation possible of the cases recorded by history in which vessels have been driven out of their proper course in the Pacific Ocean, whose examination altogether may afford us an insight into the natural hypotheses of migrations across the ocean.

[1] Translated from Petermann's Mitteilungen, 36 Band, 1890, VII, VIII.

The chart upon which have been mapped out the course of compulsory voyages shows very distinctly four separate districts in which craft are driven out of their way, according to which this discussion is naturally divided. These four districts, which will be examined successively, are the following:

District I.[1]—The islands between the Philippines and Gilbert Archipelago from 0° to about 15° north.

District II.—The islands west of Samoa and Tonga from 0° to 22° south (western boundary of New Guinea).

District III.—The islands east of Samoa in the same latitudes (eastern boundary, Crescent Island).

District IV.—The northern basin of the Pacific Ocean.

The results of our argument will form anthropogeographic conclusions, to which we shall be led by the material gathered.

DISTRICT I.

The first of the districts marked out above lies in the monsoon region of southeastern Asia; here the vicinity of the continental masses of land exerts an influence which greatly modifies the action of the winds. Hence, just in this region, instances of compulsory migrations accumulate, and we find a fitting motive to the first field for examination in the accidental voyages which start from the Malay Archipelago or find their goal there. Reports of such in former times exist in the descriptions which Spanish missionaries and travelers give of the Philippine Islands and neighboring groups. In the year 1638, a ship called *Conception* was driven from Manila to Tinian, one of the Ladrones.[2] From the letters of the missionaries, De Brosses states[3] that, in the year 1696, twenty-nine Pelew islanders, or natives of islands previously unknown, were driven in two boats to Guivam, on the island of Samal. The wind tossed them about for seventy days, and five of their number died from the exertions and privations of this voyage of 800 kilometers. At the same time two women were found on the same island who had been

[1] We have intentionally avoided the usual names Micronesia, Polynesia, etc., because the natural conditions compel us to assume a uniform population of the Oceanic islands, and such a distinction in the nomenclature might easily lead to an opposite comprehension.

[2] De Brosses-Adelung: Complete History of Ocean Voyages, page 553, and De Brosses: Voyage aux terres australes, Vol. II, page 443.

[3] The same, page 350. Cook: Third Voyage, French ed. I, page 254. Note Omai: Reports, etc., page 109. Ellis gives in Polynesian Researches, I, page 125, forty persons; so also does Malte-Brun, according to Palmer: Kidnapping, etc., page 30. One of the castaways died soon after the arrival; there is also a difference of ten persons; but this seems later to have been merely an error in print. According to Semper: Pelew Islands, page 356, it appears from the statements of Father Murillo Velarde (Histoire, etc., page 375, and following Manila, 1749) that these islanders can not have been natives of Pelew, which the name of the island, Panlog, controverts, but must have come from Yap, or still farther eastward. (The lettres édif. also oppose it.)

brought there by a similar accident. It might be supposed that inhabitants of the Philippine Islands would also have been carried to the Pelew Islands, but this conjecture is not confirmed. There is not a single instance of such a compulsory voyage, but there are transactions which can explain this phenomenon. These are the futile efforts made by the Spaniards to reach the Pelew Islands from the Philippines, which are related by De Brosses and Burney[1] from the travels of Franciscus Padilla. The first effort of the Spaniards to discover the "New Philippines" occurred in 1707, after a shipwreck suffered by some of the inhabitants of these islands, whereby they became known.[2] But this was frustrated, as were also four other attempts, which were undertaken in the years 1708, 1710, 1711, and 1729. The first time any one succeeded in sailing from the Philippines to the Pelew Islands[3] was in 1731. These noteworthy circumstances teach us the close connection existing between accidental voyages, and thus also the migrations of the Oceanic peoples, and the mechanical movements of the wind and the sea.

There are, however, instances of vessels being swept from more southern regions to the Pelew Islands. Captain Wilson, after his shipwreck in the year 1738, found at Pellilu a Malay who, with six companions, had been carried thither from Ternate in the Celebes.[4] Dumont D'Urville also mentions this case.[5] A thoroughly analogous event happened, according to Johnson's statement, in the year 1859 and in the following one, when two boats from Salibago were driven upon the northwestern side of the Pelew Islands. The crews landed at the village of Aibukit, and Kubary afterwards found one of the castaways still there.[6] Micklucho-Maclay, during his brief stay in Yap and Pelew, also frequently met persons from other islands who had been cast away on them; for instance, he found on the main island, Baobel-taop, in the village of Malogiok, a man from Bul, on the northern coast of Celebes,[7] who made his voyage in eighteen days.

In the first group is one of the most remarkable and at the same time also the best known voyage which is related of Kadu. The Russian captain, O. v. Kotzebue,[8] met him on the island of Aur. Chamisso, Kotzebue's traveling companion, was induced by this singular case to pay special attention to compulsory migrations. Kadu was a native of the Ulie Islands, and with two of his countrymen and an inhabitant of

[1] History of the Discoveries.

[2] De Brosses-Adelung, page 429 and following.

[3] E. Butron de la Serna, in Bol. Soc. Geogr., Madrid, 1885, page 23, and Lettres des Missions, X and XI.

[4] Semper: Pelew Islands, Supplement 11. Lesson: Les. Polyn. et leur migrations, I, page 369.

[5] Voyage au pole sud et dans l'océanie, V, page 208.

[6] F. Ratzel: Völkerkunde, II, page 340 and following.

[7] Ibid.

[8] Reise um die Welt, I, page 103.

the island of Yap, while on a voyage from Ulie to Fais, was overtaken by a storm, and after drifting a long time was cast ashore upon the Aur group of the Radack chain.[1] Thus, the wind had driven the luckless voyagers a distance of 2,700 kilometers.[2] Kadu was taken on board of the *Rurik*, where Chamisso especially interested himself in him, and from the narratives of our man of Ulie noted a series of similar cases which he himself deems reliable. An event precisely analogous to this is the casting ashore of seafarers from Yap upon this same group of Aur where Kadu was found. The latter distance even exceeds the former by 300 kilometers. In Chamisso's time there were also five natives of Lamotrek living on the southeastern side of the Arno group, who had been borne there by the wind and currents. In 1857 people from Ulie were driven to the Marshall Islands in the same way.

It is not without some astonishment that we find ourselves in the presence of this immense number of compulsory voyagers, since their course is exactly opposite to what we should expect from the mechanical movements of the waves and the wind in this group. In fact, there is also no lack of accidental sea voyages in the contrary direction which appear to us much more significant. Thus, Chamisso met at Guahan a native of Lamotrek who knew the names of Radack and Ralick, and this circumstance, though not with absolute certainty, indicates a castaway from the chain of islands farther westward.[3]

There is a noteworthy event which occurred about the year 1807, when a boat was driven from Tuch to Guahan, that is, about 800 kilometers, in a northwestern direction.[4] De Brosses gives two similar instances from the letters of A. Cantova.[5] On the 11th of June, 1721, and two days later people from Faraulep who wished to go to Ulie, but were driven about twenty days by wind and tempest, were stranded here.[6] According to Cook,[7] who, in his third voyage, also mentions these events, there were twenty-four people in the first boat, while the latter contained only six. In the same way, during the previous year, two canoes were swept from a distant island to one of the Marianne group, but it is not stated whence they came. It is, however, certain that in the period between 1760 and 1770, a boat from Yap, lying 800 kilometers toward the southwest, was cast ashore on the same island of

---

[1]Reise um die Welt, I, page 103.

[2]The estimate of the length of such voyages is especially unreliable, where months are taken as the basis of the measurement of time. Kadu gave eight months; M. Waitz (Anthropologie, I, p. 225, and V, p. 21), only five months are named.

[3]Chamisso: Bemerkungen zur Reise um die Welt, page 127. Quatrefages, page 105; Palmer, page 30. Bastian: Inselgruppen, page 104.

[4]Chamisso: Bemerkungen zur Reise um die Welt, page 140.

[5]De Brosses-Adelung, page 553.

[6]Ibid., page 464.

[7]Cook: Third Voyage, I, page 254, note (Lettres édif. XV, pp. 196–215). In Burney, where these two cases are mentioned, A. Cantova's letter to d'Auberton is given.

the Marianne cluster.[1] A chief from Faraulep, just mentioned, was once driven by accident upon Mogmog, near Yap. He set sail for Guahan, but missed his way; and the same voyage was once made by a little boat which carried only three men, but sailed faster than the two larger vessels with which it came.[2] A very remarkable case was related by Rua, a native of Nukuor. He left his home on the 6th of December, 1876, and with a coverlet for a sail tacked about for seventeen days to reach Ponapl, but missed it and was stranded on the Minto Reef, 450 meters due north of his starting point, where he was obliged to support life until September, 1878, when the schooner *Lotus* found him and brought him to Tuch.[3]

The other instances of compulsory voyages in our first district belong to the eastern islands, and bring these groups into connection with each other and also with the western ones. Radack and Ralick maintain a constant intercourse and therefore accidental voyages frequently occur here, though of less length than in the examples previously cited. While Chamisso remained in Ailuk a young chief from Mesid (probably Mejit, only 100 kilometers eastward) was driven ashore there in a little fishing boat by a tempest;[4] and many years before five persons from Repith-Urur, an island of the Gilbert Archipelago,[5] were cast upon the island of Relich in the Ralick chain. Besides, there were on the island of Airik of the Kaben group, a man and a woman, and on Arno, formerly mentioned, two men and a woman, also from Repith-Urur, who had been borne thither by the winds and current. During Kadu's residence on Aur two boats, each containing a man and a woman, arrived there from the same island of the Gilbert Archipelago.[6] Lastly, a case very interesting in itself and analogous to that of castaways, though less important, is the appearance of driftwood and the floating of the wreckage of ships, when the question is the possibility of the dispersion of peoples over the ocean in connection with the mechanical movements of the atmosphere and the sea.[7] On Tabual Island, of the Aur group, Chamisso found a woman from Bogha, who, while trying to carry leaves of the cocoanut palm from one island to another, was caught by the tide and swept away; her cocoanut fronds served as a raft, and five days after she was washed ashore on Utirik.[8]

---

[1] Chamisso: Bemerkungen, pages 117 and 140.

[2] It is known that people from the Caroline Islands often sail to Guahan; therefore instances of vessels driven out of their course frequently occur in this region.

[3] Ethnograph. anthropol. Abteilung des Museum Godeffroy in Hamburg, page 342.

[4] Chamisso: Tagebuch, page 195.

[5] Ibid.: Bemerkungen, page 148.

[6] Ibid., page 184.

[7] We might here express the conjecture that the dissemination of the cocoa palm, and especially of certain land animals, would be found associated with the dispersion of human beings. For instance, there are uninhabited islands, and these are destitute of these palm trees, as the Ducie Islands (Paumotu); Timoe, on the contrary, lying about 10 degrees westerly is inhabited, but has no cocoa palms. (Zeitschr. d. Gesellsch. f. Erdk. Berlin, 1870, p. 346.)

[8] Chamisso: Tagebuch, page 184. Kubary: Ethnogr. Beitrage, pages 47 and 120.

But still larger numbers of the inhabitants of the Marshall and Gilbert islands were carried out of their course and cast away farther westward in the center of the Carolines. This fact may already be conjectured from Kadu's tales. According to his statements, "Fanopé" must be groups of low islands, whose existence became known by the frequency of voyagers from thence being cast upon Puluhot; besides, Kadu had learned on Puluhot a song in which a distant group of islands, Malilegotot, is mentioned.[1] Fanopé is scarcely identical with Ponape, which shows a series of names that have a similar sound, because the latter island is mountainous. Nor do we suppose that Funafuti or Fuana-tapu of the Ellice Islands is meant; but at any rate, long compulsory voyages from west to east must be the foundation of such traditions. Besides, we do not lack well-authenticated cases of the same kind. In the year 1856, a boat was swept from Ralick upon Kusaie of the Caroline group, and a few days later another was driven ashore upon the island of Mokil or Wellington, lying still farther west;[2] that is, a compulsory voyage of nearly 1,100 kilometers was made with the wind and the current. It is also worthy of note that the inmates, in spite of the forces working against them, succeeded in returning home. Men from the Marshall Islands were also cast ashore upon the Gilbert Islands lying toward the southeast; for instance, in the year 1861; and, on the other hand, inhabitants of the former were swept upon Radack and Ralick.[3] Hernsheim reports[4] the indubitable fact that inhabitants of the Marshall Islands were carried farther to the Carolines, to Pleasant Island, and still westward for distances of 2,700 kilometers. For instance, he himself took from Hongkong to their home, the Kingsmill Islands, four native Mainas who, while on a short cruise from one island to another, were surprised by a violent storm, and in ten days carried to 2 degrees south and 161 degrees east—that is, a distance of 1,300 kilometers. There they were taken on board a French ship. The authenticity of a similar event is vouched for by the French missionary Maigret. During his residence in Ponape, in the year 1837, he saw a man who had landed there by accident from Marakai, in the Tarawa group; on the other hand, it is asserted that this very Marakai obtained its population from Ponape; the islands are 1,500 kilometers apart, and therefore, in this instance, it is an especially favorable circumstance that the migration is compulsory. At the same time two boats came to Tarawa from an island of the same Gilbert Archipelago,[5] lying southeast of it, called by Hale Amoi.[6]

---

[1] Chamisso: Bemerkungen, page 148.

[2] Nautical Magazine, 1858, page 403.

[3] Bastian: Inselgruppen, page 104.

[4] Mitteilungen der Geogr. Gesellsch. Hamburg 1885-86, page 303.

[5] The Gilbert islanders build their boats of driftwood (Zeitschr. d. Ges. f. Erdk. Berlin, N. F. 15, p. 370; and North. Pac. Sailing Directory, p. 939).

[6] United States Exploring Expedition, V, pages 85, 182, and 190.

DISTRICT II.

In leaving the first and most diversified of our districts, we can name only a single instance of a compulsory voyage, which forms a bridge across the region of calms to the group of islands mentioned in the introduction as belonging to the second district. It is a fact that an inhabitant of the Kingsmill Islands was once driven to Rotumah.[1] An inhabitant of this latter island was carried to Samoa, and this voyage must have lasted not less than three months. Another Rotumah man reached Viti. Almost the opposite voyage, in a little more easterly direction, was made by Kow Muela, a Tongan, who had gone with a band of young men to the Viti Islands on an expedition. After he had harassed this archipelago for two years he sailed for Tonga, but at Vavau encountered unfavorable winds and was compelled to shape his course for Samoa, but reached Fotuna,[2] lying to the northwest. All the other accidental voyages in our present district show a common noteworthy characteristic—they all, with slight modifications, take the same main direction from west to east.

Cook and the Forster brothers noticed the kinship which the inhabitants of certain islands of the New Hebrides showed to the Tongans and Samoans, but there was no attested fact which could have explained the necessity of such a relation. The second voyage[3] which Captain Bligh's boat, after his landing in Toto, made in a westerly direction—it finally landed at Timor—sufficiently proves that compulsory migrations from central Polynesia do take place for considerable distances with the trade winds. Of course, in such occurrences the Viti Archipelago could not remain exempt, and, in fact, through the reception of Tongan blood, a mixed race has been formed, which occupies the windward side of these islands, and about 200 pure Tongans also live on this group.[4] Here, it is true, the normal relations of traffic also exist, and the Tongan boat building in Viti, etc., must not be overlooked. It is the eastern winds which drive them there. Lakemba became their principal settlement, and when the missionaries arrived there were three Tongan colonies on this island.[5] But Tongans and Samoans were also driven still farther westward. Thus Erskine found in Nengone three descendants of Tongans who had been swept ashore there many years before in several canoes by a strong wind.[6] Turner, who remained a

[1] Waitz: Anthropologie der Naturvölker, V, page 20. Polack: Narr. II, page 427. D'Urville, V, page 362. Dillon, I, page 294.

[2] Mariner: Tonga, Neue Bibliothek der Reisen, Bd. XX, page 276.

[3] Expedition of the *Novara*, II, page 229, two volumes, by B. v. Müllerstorf-Urbair. Bligh: Voyage in the Pacific; Account of the Mutiny.

[4] Cruise of the *Curaçao*, page 140. At Home in Fiji, by G. Cumming, II, page 289.

[5] Ten Months in the Fiji Islands, by Smythe, page 124.

[6] The Islands of the Western Pacific, page 373, Meinicke: Die Inseln des Stillen Ozean, I, page 375, note 14.

long time on the western group of islands in the Pacific, found at Vate the blind chief Bula, his interpreter, and several young people who were descendants of Tongans, and had also come there by accident.[1] Bula called himself Sualo. He left Samoa in a double canoe about the time of the Atua war (1825) in company with fifty other persons, principally Tongans. They lived a number of years in the new home to which the wind had borne them, but when they set out to seek the old one they missed their native islands, and remained permanently on Vate. Turner also found on the island of Lifu Polynesians who, like Bula and his companions, had been carried to this western island. It is also stated that people have been driven upon Tanna from Samoa and Tonga. The islands of Erromanga and Immer have undoubtedly been peopled from the east by a race whose dialect is akin to that of Tongan. Their inhabitants had thus made the same journey as their countrymen on Tanna.[2] Codrington, who is well acquainted with the Melanesian languages, mentions in the western range of islands in our second district a large number of localities which have received Polynesian elements of population, and he, too, attributes these immigrations to accidental causes. Besides Uvea of the Loyalty Islands, he cites Fotuna, which is identical with Erromanga or Eranan, already mentioned, and Vate. This influence also extends to several islands of the Shepherd group, and shows itself especially in the one seen by Cook and named from its position Mai, or Three Hills. But he goes still farther, and not only includes the district north of the Banks Islands (Tikopia) and the Swallow group (Matema), situated near Santa Cruz, but, with Bennell and Bellona, embraces the southern, and with Ongtong Java, near Isabella, the central Solomon group. Codrington himself met on the island of Ureparapara, one of the Banks group, a man and woman with their son, who had been cast ashore there from a Polynesian island; and even at Saddle Island[3] he found children who were descendants of Polynesians who had been stranded there. Lastly, just before his stay on the Banks Islands people had arrived two successive years from Tonga and remained a considerable time.[4]

---

[1]Nineteen Years in Western Polynesia, page 398. Bastian: Inselgruppen, page 87. Murray, Missions in Western Polynesia, also relates this event, page 233. According to him, there were Samoans in the party.

[2]Bastian: Inselgruppen, page 87; Garnier reports immigrations from Viti into Lifu. Ibid., page 180.

[3]Saddle Island in Torres Strait can not be meant, as an island lying nearer would probably have been reached.

[4]Codrington: Melanesian Languages, page 7 et seq. Hale states that Quiros had taken a man prisoner on Taumako, who told him that arrows had been brought to this island from a distant country called Pouro. He supposes Pouro to be in the Indian Ocean and thinks that the arrows must have come from India; but Guppy corrects this, and says that the place meant is Bouro, which lies only 500 kilometers west of Taumako, while Pouro is more than 3,600 kilometers. (United States Exploring Expedition, V, p. 195. See also Burney, History of the Discoveries, II, page 308.)

DISTRICT III.

The farther we go from the masses of land forming the continents lying eastward and approach the third district, where vessels are driven from their course, the shorter becomes the series of instances recorded by history of compulsory voyages which are to give us a clearer comprehension of the intermingling of the Polynesians; yet even here they are not wholly lacking, and present almost the greatest wealth in regard to the line of direction.

The province now to be considered is united with the former one by three long accidental voyages. The boat of the Englishman Williams was once driven from Rarotonga to Tongatabu, that is, a distance of more than 1,500 kilometers, and on his last voyage he himself conveyed to their home several natives of Aitutaki who had been carried by the wind to Probys Island (Nine Island), which lies 1,500 kilometers westward of Cooks or Herveys Island.[1] The third connecting route presents itself in 10 degrees south, and extends far beyond the eastern limit of the second district. In the year 1861, inhabitants of Manihiki or Humphrey (10° S., 161° 1′ W.) were swept away by a storm and reached Nukulailai; one of them, Elkana, on this occasion gave there and in Funafuti (the Ellice group) the first Christian instruction.[2] An inhabitant of the austral island Rurutu was once transported to this same island, Manihiki; his wanderings lasted six weeks.[3] And in the year 1820 a canoe, also from Rurutu, arrived at Uliatea, in Maurua, having accomplished this voyage of 900 kilometers in from two to three weeks.[4] From this region of Maurua we have to note two cases which extend to the Hervey group. In 1824, a boat which belonged to Mr. Williams left Raiatea (Uliatea) with a westerly wind to sail to Tahiti, but the wind changed, and the boat, several months later, was found 1,400 kilometers toward the southwest. Another time Williams's own boat was driven from Tahiti to Atui. Shipwrecked voyagers were found by Cook on the same island. During his second voyage he took with him to England Omai, a native of Raiatea, who accompanied him on his third voyage. When they reached Atui, Omai found three of his countrymen who had been driven ashore there when they were sailing homeward from Tahiti. Besides Omai's acquaintances there were seventeen others in this party.[5] Captain Bligh found on Mäatea a boy and a woman, the sole survivors of an unfortunate band who had been carried there some time before his arrival from Tubnai.[6] Ellis reports

[1] John Williams: A Narrative, etc., page 132.

[2] Zeitschr. d. Ges. f. Erdk., Berlin, 1868, page 131.

[3] Williams, page 469.

[4] Ellis: Polynesian Researches, I, page 125. Hartwich: Die Inseln des Grossen Ozean, page 334.

[5] Cook: Third Voyage, I, page 252. Omai: Reports. I, page 109 and many others.

[6] Bligh: Voyage in the Pacific, I, page 125.

that frequently people from eastern islands of which nothing had been previously known on the Society Islands were cast on the shores of Tahiti.[1]

In the small number of instances in this eastern district of the region where boats are driven out of their course, compulsory voyages against the wind are not largely represented; but they are not entirely wanting. Thus it is positively proved that the austral island Tubuai,[2] previously mentioned, was peopled at a recent date, 1840, by natives of an island lying westward, probably Rimitara, and the immigrants were brought there by unfavorable winds.[3] Timoe or Crescent Island also received its population accidentally and from the west, namely, from Mangarera.[4] Lastly, the case of voyagers being driven from Raiatea to Tubuai is also assured to us.[5]

It would be of special value to our position if we could record an instance of an accidental voyage to Easter Island,[6] but though this is not possible, there are two actually certified voyages against wind and current from the Paumotu group which are analogous to the case we must assume in order to bring the Easter Islanders into connection with the other Polynesians. Captain Beechey[7] found on the island of Byam (Martin) forty Tahitians—men, women, and children—who had been swept in a double canoe against the prevailing wind from Chain Island to Barrow Island (Wana Wana), a mere reef, that is, a distance of about 1,000 kilometers. Beechey took one of these unfortunates, Tuwarri, on board, and when they reached Bow Island this Tahitian found his brother and various friends, who had been stranded there by the same disaster. The latter had first made a voyage with the wind, so that the total length of their passage was about the same distance—1,000 kilometers.[8]

---

[1] Ellis: I, page 125.

[2] United States Exploring Expedition, V, page 130.

[3] Ibid., page 140.

[4] Ibid., page 130.

[5] Ibid.

[6] There is probably no doubt that Easter Island has also been peopled from the west. Beechey gives excellent reasons for it (I, 79). Micklucho-Maclay informs Bastian in a letter that Easter Island was known to the inhabitants of the nearest island as Rapa nui (Zeitschr. d. Ges. f. Erdk. Berlin 1879, 7). According to tradition, the population of this island came from Oparo, lying 1,900 miles westward. Images and stone slabs, like those in Easter Island, have been found there (Palmer, p. 29). Geiseler also supports this; but mentions a tradition, according to which the Easter islanders are said to have come from the Galapagos Islands; but this tradition is opposed to the opinions of other natives; besides, the Galapagos Islands were uninhabited. (Easter Island, an abode of prehistoric civilization in the South Seas, p. 43.)

[7] Beechey: Voyage in the Pacific Ocean, I, page 261. Palmer, page 30, and many others.

[8] It is also an important circumstance that Wilkes found driftwood at Enderbury (3° 8′ S., 171° 8′ W.) which must have come from the west. (Behm, in Petermann, 1859, p. 181); and Hale (p. 157) speaks of the wreckage of ships drifting upon

DISTRICT IV.

After connecting the individual groups of islands in the Pacific Ocean from Pelew to Paumotu, there is still the basin of the North Pacific. Instances of accidental voyages, whose point of departure lay within one of the districts already discussed, do not occur, and the point in question concerns only vessels from the continents, especially Asia, which have been swept out of their course.

The Bonin Islands (properly Bunin-Siam, that is, uninhabited islands) were discovered in the year 1675, when a Japanese junk was cast ashore there;[1] and in 1690 Japanese, who often made voyages to the Ladrones, were carried away to Manila.[2] In the year 1869, a Chinese junk, which had been swept from the Liukiu Islands, was stranded upon Baker Island. In 1836, the figurehead of a ship from China was found in Metalanim at Ponape.[3] It is singular that no connection from the groups of islands already established can be made with the Sandwich Islands. Vague traditions and ethnographical characteristics among the Hawaiians, it is true, point to Polynesia, but there is no event which would permit us to deduce positively that the natural conditions for bringing the Hawaiians into a necessary connection with the other islanders have existed.[4] Yet there are abundant reasons of a

Faknafo (9° 20′ S., 171° 4′ W.) of the Union group; also of the floating ashore of clubs which must have come from Viti or Samoa. The instance of a craft being carried out of her course to Raratonga is only to be inferred from the traditions existing there; people from the Society Islands are said to have arrived at various times by accident, but the Raratongans also trace their origin to Raiatea, and this coincides with the beliefs of the inhabitants of this latter island. (Ellis I, p. 126.) Beechey (I, p. 60) mentions various errors of reckoning, which we will pass over here. Behrens, a traveling companion of Roggewein, was driven, during his short voyage from the island of Juan Fernandez to Easter Island, 318 (corrected to 204) English miles farther west than he expected to be. With Blossom the difference in the same region amounted to 270 miles; and when La Peyrouse went from Conception to Hawaii, during which passage he touched at Easter Island, he noticed that he had made an error in his reckoning of 300 miles.

[1]Geogr. Handbuch, by R. Andree (for school atlas), page 370.

[2]From similar events in earlier times the fact may be inferred that in the eastern portions of the Malay Archipelago, for instance Ceram, legends of white immigrants had existed before the arrival of the first Europeans. (See Bastian Inselgruppen, p 242.) On the other hand, Rein (Japan, p. 449 and following) maintains that natural conditions existed for tracing the population of Japan from the Malay Archipelago; other reasons, however, are decidedly against this conjecture.

[3]Waitz I, page 225; V, page 20; F. Ratzel: Völkerkunde II, page 340 and following.

[4]A ship was once wrecked on Fakaafo (Union group). Hale supposes that it came from Hawaii, because the word "debolo" (in Fakaafo, it is true, with a different meaning (is found in both places (United States Exploring Expedition, V, p. 157.) Traditions of voyages to Nukahiva are not lacking in Hawaii; voyages to Tahiti are even said to have been undertaken (Bastian-Inselgruppen, p. 286.) The general opinion is that the boats of the Hawaiians were formerly larger; voyages were said to last two or three months. (Ellis: Tour through Hawaii, p. 441.) A direct relation is even said to have existed between the New Zealanders and the Sandwich

different character, which compel us to believe in a kinship between the Hawaiians and the other Polynesians. In the ancient population of Malden and the vanished one of Fanning, we find the unmistakable bridge between the Society and the Sandwich islands.[1] There has always been a conviction that an influence from China, and especially from Japan, has asserted itself here. Cases of craft from eastern Asia being driven to Hawaii remove any doubt of this fact. Besides, these cases are especially calculated to prove to us how closely the population of Polynesia is united to that of Asia.

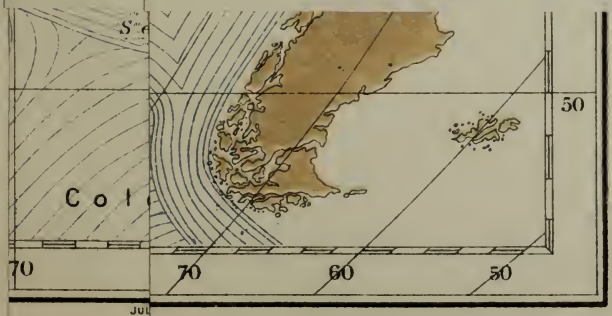
According to the statements of the Hawaiians themselves, such occurrences are not infrequent. Jarves relates that in December, 1832, a Japanese junk was driven ashore at Oahu, near the harbor of Waialea. Nine of its occupants were still alive, after having been tossed to and fro eleven months upon the sea.[2] The remark made by Hawaiians upon the arrival of these people is worthy of consideration. They said: "It is plain now we come from Asia," when they saw that the strangers showed a strong resemblance to themselves. In the time of Opili also, white men landed on the southwestern coast of Hawaii, and a reliable statement informs us that a short time after the departure of these strangers another band of white men were also stranded on the western side of Hawaii. The boat had neither mast nor sail and was painted. The people were dressed in yellow and white, and one wore a hat adorned with plumes. They long exerted an influence in Hawaii. Later, a boat is said to have arrived at the same place, and about the year 1620 a second one came to the southern side of the bay just mentioned, in Palekai. The ship was wrecked and only the captain and one white woman reached the land. Two vessels are also said to have once been cast upon the northeastern shore, but no one gained the beach. Wilkes states that a whaler received on board five Japanese and took them to the Sandwich Islands. There is a mythical story that, under the government of King Kamaloohua, in Maui, a Hawaiian vessel brought in four strangers, whose complexion was only moderately dark, and who were probably the crew of a wrecked Japanese boat. With the frequency of such cases, it can not surprise us that instances of compulsory voyages have been recorded which extend over the entire

---

Islanders; both cultivated—the former according to tradition—the sweet potato, which did not exist in the Society Islands. (Shortland: Traditions and Superstitions of the New Zealanders, p. 34.) Williams found in New Zealand a dog which lived in a wild state in Maurua (Samoa). He therefore seeks Sawaii there, and not in Hawaii, (Hood: Cruise of H. M. S. *Fawn*, p. 148.) Max Buchner lays stress upon a direct connection between the Hawaiians and New Zealanders. (Mitheil. d. Geogr. Ges. Hamburg, 1876–77.)

[1]Zeitschr. d. Ges. f. Erdk., Berlin, 1868, page 116.

[2]History of the Hawaiians, page 29; North. Pacific Sailing Directory, page 1209; United States Exploring Expedition, V, page 260, and many others. (See Waitz, V, p. 20.) [The reader should consult a pamphlet entitled The Long Voyages of the Hawaiians, by N. B. Emerson, Honolulu.—Ed.]


50
70
70
60
50

different character, which compel us to believe in a kinship between the Hawaiians and the other Polynesians. In the ancient population of Malden and the vanished one of Fanning, we find the unmistakable bridge between the Society and the Sandwich islands.[1] There has always been a conviction that an influence from China, and especially from Japan, has asserted itself here. Cases of craft from eastern Asia being driven to Hawaii remove any doubt of this fact. Besides, these cases are especially calculated to prove to us how closely the population of Polynesia is united to that of Asia.

According to the statements of the Hawaiians themselves, such occurrences are not infrequent. Jarves relates that in December, 1832, a Japanese junk was driven ashore at Oahu, near the harbor of Waialea. Nine of its occupants were still alive, after having been tossed to and fro eleven months upon the sea.[2] The remark made by Hawaiians upon the arrival of these people is worthy of consideration. They said: "It is plain now we come from Asia," when they saw that the strangers showed a strong resemblance to themselves. In the time of Opili also, white men landed on the southwestern coast of Hawaii, and a reliable statement informs us that a short time after the departure of these strangers another band of white men were also stranded on the western side of Hawaii. The boat had neither mast nor sail and was painted. The people were dressed in yellow and white, and one wore a hat adorned with plumes. They long exerted an influence in Hawaii. Later, a boat is said to have arrived at the same place, and about the year 1620 a second one came to the southern side of the bay just mentioned, in Palekai. The ship was wrecked and only the captain and one white woman reached the land. Two vessels are also said to have once been cast upon the northeastern shore, but no one gained the beach. Wilkes states that a whaler received on board five Japanese and took them to the Sandwich Islands. There is a mythical story that, under the government of King Kamaloohua, in Maui, a Hawaiian vessel brought in four strangers, whose complexion was only moderately dark, and who were probably the crew of a wrecked Japanese boat. With the frequency of such cases, it can not surprise us that instances of compulsory voyages have been recorded which extend over the entire

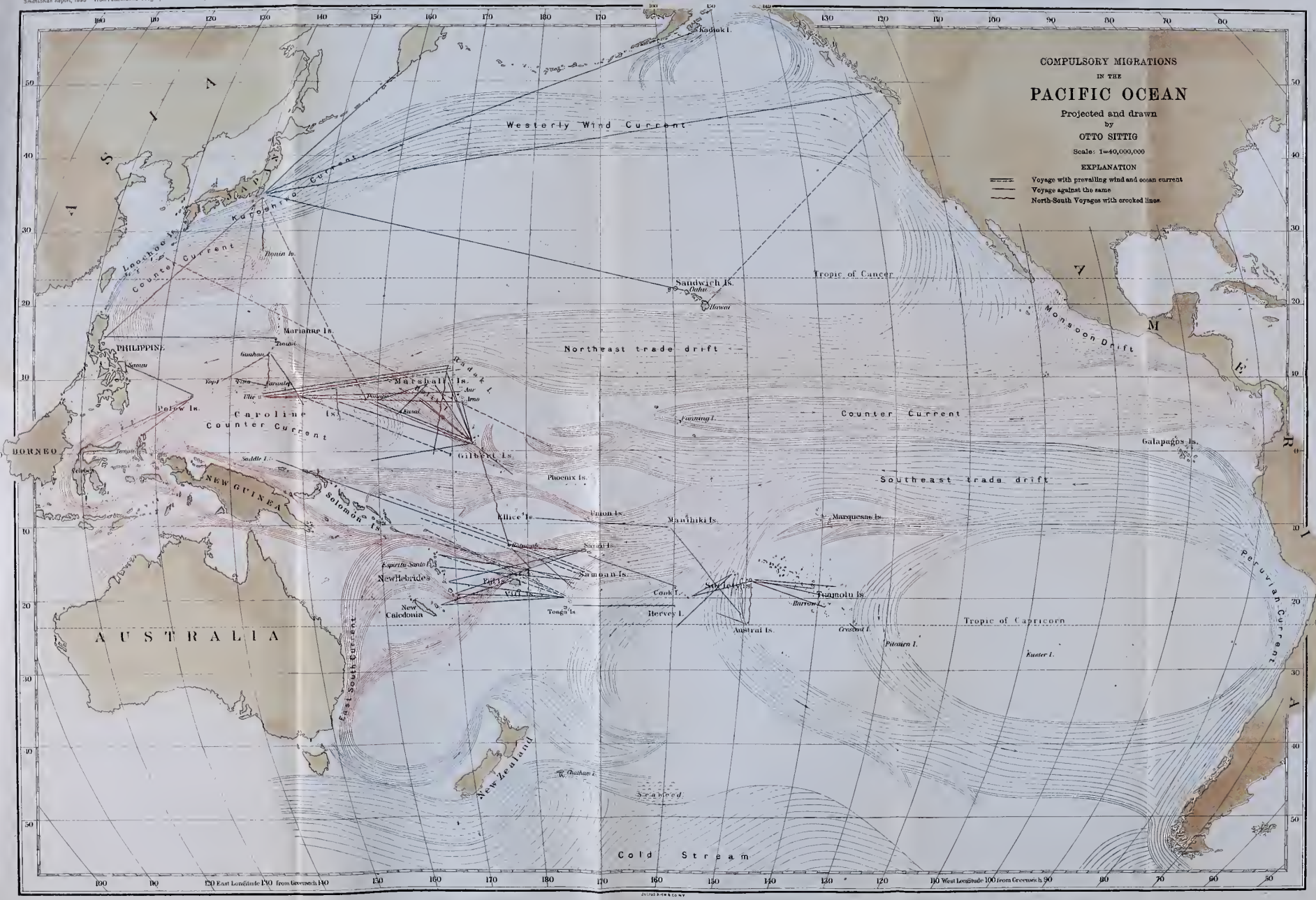
---

Islanders; both cultivated—the former according to tradition—the sweet potato, which did not exist in the Society Islands. (Shortland: Traditions and Superstitions of the New Zealanders, p. 34.) Williams found in New Zealand a dog which lived in a wild state in Maurua (Samoa). He therefore seeks Sawaii there, and not in Hawaii, (Hood: Cruise of H. M. S. *Fawn*, p. 148.) Max Buchner lays stress upon a direct connection between the Hawaiians and New Zealanders. (Mitheil. d. Geogr. Ges. Hamburg, 1876–77.)

[1]Zeitschr. d. Ges. f. Erdk., Berlin, 1868, page 116.

[2]History of the Hawaiians, page 29; North. Pacific Sailing Directory, page 1209; United States Exploring Expedition, V, page 260, and many others. (See Waitz, V, p. 20.) [The reader should consult a pamphlet entitled The Long Voyages of the Hawaiians, by N. B. Emerson, Honolulu.—Ed.]

Smithsonian Report, 1895 From Petermann's Geographische Mitteilungen, 1890



basin of the Northern Pacific to the American Continent. The voyages to Hawaii may be regarded as transition stages to those to America. The analogy applies to two compulsory voyages, also of Japanese vessels, the first, which sailed for Osaka, was cast away on Cape Lopatka in July, 1729; the other was carried to the southern end of the island of Kadiak.

Kotzebue[1] states that Japanese have been carried to America, and about the time when the Japanese junk reached Oahu such a boat also landed near Cape Flattery, north of the mouth of the Columbia. Sometimes Chinese ships were even driven to the northwestern coast of North America.[2] In the examination of the Sandwich Islands, the fact is specially worthy of note that articles are transported here which show their origin in North America with the same cogency as the voyages previously mentioned indicate Asia. Vancouver found in Kauai a canoe 61½ feet long, which was hollowed from a single log.[3]

The prospects in the investigation in the case of New Zealand are meager. Probably no one doubts that this pair of islands obtained its population from an island centrally situated among the groups formerly discussed, and a glance at the mechanical relations of the Pacific suffices to make this easy of comprehension; but there is no positive proof of it. The report that a ship on the way from Savaii to Tonga was overtaken by a storm, driven toward Viti, and finally reached the coast of New Zealand is shrouded in obscurity;[4] and it seems almost superfluous to cite the instance of a vessel driven out of her course, which occurred on the northeastern coast of New Zealand. In June, 1844, a boat from Opotiki was carried to Tauranga, which is only about 120 kilometers westward. The single point worthy of note here is the fact that the incident occurred in consequence of a northeast storm.

The Chatham Islanders trace their origin to New Zealand, and have the tradition that about the year 1750 their ancestors were driven on shore by a westerly storm; but these must not be confounded with the New Zealanders who came there later for the purpose of trade.[5] We deem this fact of importance, as it lays stress upon the point that the primary act was the driving out of the course, and the secondary one

---

[1]A New Voyage, etc., Lond., 1830, II, pages 36, 48, 53.

[2]United States Exploring Expedition, by Wilkes (two volumes), II, page 295.

[3]North Pacific Sailing Directory, page 1209. In Hawaii (eastern side) two anchors were found; Kotzebue supposes that they came from one of the ships which were driven out of their course (see Jarves, p. 102); and the iron which Cook found in the same place is said to have belonged to Spanish voyagers from Manila. (Bastian: Inselgruppen, p. 242, note 2. Cook: Third Voyage, II, p. 402.) Cook thinks it entirely a matter of course that this iron must have come from the east. The frequency with which driftwood washes ashore along the whole northern rim of the Pacific is generally known.

[4]United States Exploring Expedition, V, page 147, and in reference to the Chatham Islands, ibid., page 148, note.

[5]Traditions and Superstitions of the New Zealanders, page 34.

the formation of commercial relations.[1] Yet other factors which compelled the Oceanic peoples to leave their native islands must not be overlooked. It is the nature of these islanders to trust themselves confidently to the sea, hoping soon to find an island where they can settle.

It is not surprising that we can record no vessel driven out of her course in the Southern Hemisphere, which extended to South America. Probably no one would assert that such an event happened, though it is not impossible. Dillon mentions, as a noteworthy example, that in June, 1824, an American ship ran into the harbor of Valparaiso, which had sailed from Mulgrave Achipelago, past Samoa, with the wind blowing constantly from the west and northwest. In the higher southern latitudes "the brave west winds" are proverbial with mariners. Since, under force of natural conditions, an immigration into South America from the west is not absolutely impossible, there is in some degree an analogy in the northern and southern basins of the Pacific with regard to the possibility of the dispersion of human beings.

But this analogy can exist only so long as the relations of the wind and currents in both basins are the same. In the vicinity of the equator—in point of fact slightly north of it—these relations are symmetrical, and complications of these relations first become operative when the groups of islands on the continents place obstacles in their way. But while the ocean north of the equator is closed by masses of land, and the northern equatorial stream is thus forced back upon itself, in the eastern portion of the southern part there is a movement of the masses of water toward the equator, and in the western a similar one toward the pole; in the center the sea, so to speak, is neutral.

Our chart shows that compulsory voyages become more and more infrequent the farther we go eastward from Asia, and, south of the equator, voyages with the trade wind are largely in the majority. This proves on one side that the accident of such a journey is most closely connected with the wind, and, on the other, that the continent of Australia is capable only in a small degree of transforming the relations of the wind sufficiently to produce the phenomena we encountered in the first district, when the huge masses of land in Asia exactly reverse the directions of the wind and currents.[2] In fact, the currents of the air

---

[1]Lesson believes that the Polynesian colonies in the New Hebrides were founded only in a limited degree by castaways; but we think that we have cited so many examples that the priority of the compulsory voyage is evident. There is no doubt that in addition to such incidents, intentional voyages must also have been made; otherwise the ethnographical picture of our islands would be even more motley than it is.

[2]The cause of the circumstance that we find no instance in our second district of a vessel being driven out of her course from the west toward the east appears to be that the inhabitants of the Hebrides, Solomon Islands, etc., undertake only voyages along the coast, as O. Finsch (Reise in die Südsee, p. 37) has pointed out.

and of the sea are much stronger and more steady in the Southern Hemisphere than in the Northern. Besides the aggregation of the islands in the Malay Archipelago, this is of special importance with regard to the western migration of the Malays, in the Indian Ocean. In our first district compulsory voyages are especially frequent; therefore the important inference follows that it is the modifications and complications of the mechanical conditions of the air and sea which carry people far out of their course into the ocean. It is also evident where we are to seek the point of departure of the Polynesians, namely, where the Oceanic islands are intertwined with those of the Malay Archipelago. The question would find but a doubtful answer, even if America on the west was closely wreathed with islands. But this is not the case and, besides, Revilla Gigedo, Galapagos, Juan Fernandez, and Salas y Gomez were, indeed, uninhabited. This fact speaks effectually against a migration from America across the ocean to our island groups.

If, in the examination of the first three districts, where boats are driven out of their course, the conviction has forced itself upon us that even the most remote Paumotu isles have received their inhabitants from the Malay Archipelago, in the presence of the Sandwich Islands still more comprehensive speculations open before our eyes. We see that the Hawaiians must naturally be mingled with Chinese and Japanese elements, and even in the Carolines this is not excluded. Perhaps herein lies the basis of the mental superiority of the inhabitants of these two groups over those of many others, and anthropogeography teaches that in reality it finds eastern Asiatic resemblances in the Carolines. If we look still farther eastward, we shall see that Bering Strait does not form the sole bridge between the Old and the New World. Migrations from Asia to America have undoubtedly taken place in more southern latitudes.[1] Nay, it even appears that the possibility of a migration backward from northwestern America to Hawaii is not excluded. With regard to South America, no material exists which could justify us in making deductions.

It seems to us, however, that the proof is furnished that the natural conditions, according to which we can judge the migration of the Malays across the sea, entitle us to group the original inhabitants of America with the Polynesians, Australians, and Malays in a single great family of peoples, the Mongoloid, who inhabited the coasts of two oceans, the Pacific and the Indian. The great capacity for journeying possessed by the Malays is an established fact. The power of separation which the Pacific Ocean has by reason of its width is diminished on the other hand, by the numerous islands; and as a continent favors commerce more when it is divided, so do islands when they are so numerous and so situated as the Oceanic ones. Here land and water

[1] We notice that, for instance, in the northwestern part of America, myths have existed which point to a migration across the sea; the Americans also have traditions of a western origin besides the one that they came from the north. (Chamisso: Bemerkungen.)

have exchanged their vocations; as, on the continent, man clings to the soil, here he is closely connected with the sea and the winds moving it—that is, he becomes a toy of the winds and waves. If by this time we have gained a comprehensive idea of the migratory capacity of the inhabitants of Oceanica, the natural result will be a perception of the inanity of the hypothesis which, to explain the dispersion of the peoples over the oceans, the Pacific and the Indian, makes a continent vanish,[1] instead of starting from the natural factors as they exist at the present day. Finally, the opinion that the people of Oceanica came from New Zealand is destroyed by merely looking at our chart.

Of course, no deductions of a positive character can be drawn concerning the individual acts of the migrations of the Oceanicans. The chart is still too incomplete, and besides, the voyages often change to the contrary direction. Only where numerous instances of vessels being carried in a certain course could be recorded are special inferences admissible. According to Kubary, the fact that the inhabitants of the Carolines were not infrequently carried to the Philippines, and that, in going there, they always reached the island of Samal or the southernmost portion of Luzon, is a proof that the northern equatorial stream breaks just at this point. On the other hand, inhabitants of the Philippines have never, so far as known, been carried to Pelew,[2] an evidence that the northeastern stream makes a circuit around these islands. The force of the current here must be very great, as it seems to conquer the first impulse of driving ships out of their course, which is most frequently the impact of the wind; for we have seen in the majority of voyages that they always occurred in consequence of storms. During long voyages, as in the case of those to America, the impelling principle, on the contrary, is to be attributed to the currents of the sea, for tempests are not sufficiently permanent. Even where the point in question concerns driftwood and other articles, the motive force is the current and not the wind, for the exposed surface is too small to permit the wind to wrest it from the dominion of the current; true, the wind acts indirectly through the stream all the more powerfully.

The aspect of our second group of castaways is a thoroughly characteristic one. The one-sided direction of the voyages leads us, with the previous deductions, to perceive distinctly a transfer of Polynesian blood to the Hebrides, etc.; but Viti must have been touched at each time on the way from Samoa to Tonga, and hence follows the constant intercourse between these last island groups.

Between our first northern district and the two southern ones is to be noticed a free space; there is scarcely a single instance of an accidental migration to record here; and the cause is not solely the scarcity

[1] Wallace afterwards explained the dispersion of animals in these regions without being obliged to assume a submerged portion of the globe.

[2] F. Ratzel: Völkerkunde II, page 341.

of islands in this region, but also the neighborhood of the zone of calms, which again affords a proof that the compulsory voyages and migrations of the nations across the sea are connected with the winds.[1]

We can now, with each distance traversed in a compulsory voyage as a radius, draw a circle around the point of departure and thus obtain an ideal conception of the migratory capacity of our islanders. It would be more in harmony with reality to unite in a curve the extreme points of voyages starting from a limited district, in order to obtain in the form of a plane a comprehensive expression of the mobility of the Mongoloid race. In the passages from Japan it is directly obvious with what remarkably mobile people we are dealing; this is a fact which ought not to be considered as trivial, which is frequently the case.

[1]Perhaps this circumstance explains why so few traces of Polynesian elements have existed between Samoa and the Moluccas. (See Meinicke in the Zeitschr. der Ges. f. Erdk., Berlin, 1869, p. 378.)

watch for many months beside this beloved one. It was not a wild delirium which had taken possession of him; the only fit of that kind was that in which he tried to drown himself in the Rhine, — at the time when the papers got hold of the terrible secret. His insanity was manifested in his conviction that he was occupied by the souls of Beethoven and Schubert. Much in the manner of your American mediums, he would be seized by a controlling power,—would snatch a pencil, and dash out upon paper the wildest discords. These we would play for him, at his request, from morning till night, — during much of which time he would seem to be in a happy trance. Of this music no chord or melody was true; they were jangling memories of his earlier works.

"One day he called his wife and myself, and took our hands in his own: — 'Beethoven says that my earthly music is over; it cannot be understood here; he writes for angels, and I shall write for them.' Then, turning to me, he said, — 'Louis, my friend, farewell! This is my last prayer for you,' — handing me the paper which I have shown you; 'and now leave us, to come again and kiss me when I am cold.'

"Then I left him alone with his Clara.

"A month from that time, Schumann was no more."

Out under the glowing sunset, I clasped hands parting with Louis Boehner, and said, as my voice would let me, — "Take this paper, and when you would have a friend, such as you have been to Robert Schumann, come and help me to be that friend."

Atlantic Monthly

THE FREEDMEN AT PORT ROYAL.

Two questions are concerned in the social problem of our time. One is, Will the people of African descent work for a living? and the other is, Will they fight for their freedom? An affirmative answer to these must be put beyond any fair dispute before they will receive permanent security in law or opinion. Whatever may be the theses of philosophers or the instincts of the justest men, the general sense of mankind is not likely to accord the rights of complete citizenship to a race of paupers, or to hesitate in imposing compulsory labor on those who have not industry sufficient to support themselves. Nor, in the present development of human nature, is the conscience of great communities likely to be so pervasive and controlling as to restrain them from disregarding the rights of those whom it is perfectly safe to injure, because they have not the pluck to defend themselves. Sentiment may be lavished upon them in poetry and tears, but it will all be wasted. Like all unprivileged classes before them, they will have their full recognition as citizens and men when they have vindicated their title to be an estate of the realm, and not before. Let us, then, take the world as we find it, and try this people accordingly. But it is not pertinent to any practical inquiry of our time to predict what triumphs in art, literature, or government they are to accomplish, or what romance is to glow upon their history. No Iliad may be written of them and their woes. No Plutarch may gather the lives of their heroes. No Vandyck may delight to warm his canvas with their forms. How many or how few astronomers like Banneker, chieftains like Toussaint, orators like Douglass they may have, it is not worth while to conjecture. It is better to dismiss these fanciful discussions. To vindicate their title to a fair chance in the

world as a free people, it is sufficient, and alone sufficient, that it appear to reasonable minds that they are in good and evil very much like the rest of mankind, and that they are endowed in about the same degree with the conservative and progressive elements of character common to ordinary humanity.

It is given to the people of this country and time, could they realize it, to make a new chapter of human experience. The past may suggest, but it can do little either in directing or deterring. There is nothing in the gloomy vaticinations of Tocqueville, wise and benevolent as he is, which should be permitted to darken our future. The mediæval antagonisms of races, when Christianity threw but a partial light over mankind, and before commerce had unfolded the harmony of interests among people of diverse origin or condition, determine no laws which will fetter the richer and more various development of modern life. Nor do the results of emancipation in the West Indies, more or less satisfactory as they may be, afford any measure of the progress which opens before our enfranchised masses. The insular and contracted life of the colonies, cramped also as they were by debt and absenteeism, has no parallel in the grand currents of thought and activity ever sweeping through the continent on which our problem is to be solved.

In the light of these views, the attempt shall be made to report truthfully upon the freedmen at Port Royal. A word, however, as to the name. Civilization, in its career, may often be traced in the nomenclatures of successive periods. These people were first called contrabands at Fortress Monroe; but at Port Royal, where they were next introduced to us in any considerable number, they were generally referred to as freedmen. These terms are milestones in our progress; and they are yet to be lost in the better and more comprehensive designation of citizens, or, when discrimination is convenient, citizens of African descent.

The enterprise for the protection and development of the freedmen at Port Royal has won its way to the regard of mankind. The best minds of Europe, as well as the best friends of the United States, like Cairnes and Gasparin, have testified much interest in its progress. An English periodical of considerable merit noticed at some length "Mr. Pierce's Ten Thousand Clients." In Parliament, Earl Russell noted it in its incipient stage, as a reason why England should not intervene in American affairs. The "Revue des Deux Mondes," in a recent number, characterizes the colony as "that small pacific army, far more important in the history of civilization than all the military expeditions despatched from time to time since the commencement of the civil war."

No little historical interest covers the region to which this account belongs. Explorations of the coast now known as that of the Carolinas, Georgia, and Florida, involving the rival pretensions of Spain and France, were made in the first half of the sixteenth century. They were conducted by Ponce de Leon, Vasquez, Verrazani, and Soto, in search of the fountain of perpetual youth, or to extend empire by right of discovery. But no permanent settlement by way of colony or garrison was attempted until 1562.

In that year, — the same in which he drew his sword for his faith, and ten years before the Massacre of St. Bartholomew, in which he fell the most illustrious victim, — Admiral Coligny, the great Protestant chief, anxious to found beyond the seas a refuge for persecuted Huguenots, fitted out the expedition of Jean Ribault, which, after a voyage of over three months across the ocean and northward along the coast, cast anchor on May 27th in the harbor of Port Royal, and gave it the name which it retains to this day. That year was also to be ever memorable for another and far different enterprise, which was destined to be written in dark and perpetual lines on human history. Then it was that John

Hawkins sailed for Africa in quest of the first cargo of negroes ever brought to the New World. The expedition of Ribault was the first visit of Europeans to Port Royal or to any part of South Carolina, and the garrison left by him was the first settlement under their auspices ever made on this continent north of Mexico. There is not space or need to detail here the mutiny and suffering of this military colony, their abandonment of the post, the terrible voyage homeward, or the perseverance of Coligny in his original purpose. Nor is it within the compass of this narrative to recount the fortunes of the second garrison, which was founded on the St. John's, the visit of John Hawkins in 1565 with timely relief, the return of Ribault from France and his sad fate, the ferocity of Melendez against all heretic Frenchmen, and the avenging chivalry of Dominic de Gourges. The student is baffled in attempts to fix localities for the deeds and explorations of this period, even with the help of the several accounts and the drawings of Le Moyne; and, besides, these later vicissitudes did not involve any permanent occupation as far north as Port Royal, that region having been abandoned by the French, and being then visited by the Spanish only for trade or adventure.

Some merchants of Barbados, in 1663, sent William Hilton and other commissioners to Florida, then including Port Royal, to explore the country with reference to an emigration thither. Hilton's Narration, published in London the year after, mentions St. Ellens as one of the points visited, meaning St. Helena, but probably including the Sea Islands under that name. The natives were found to speak many Spanish words, and to be familiar enough with the report of guns not to be alarmed by it. The commissioners, whose explorations were evidently prompted by motives of gain, close a somewhat glowing description of the country by saying, "And we could wish that all they that want a happy settlement of our English nation were well transported thither."

Hitherto England had borne no part in exploring this region. But, relieved of her civil wars by the Restoration, she began to seek colonial empire on the southern coast of North America. In 1663, Charles II. granted a charter to Clarendon, Monk, Shaftsbury, — each famous in the conflicts of those times, — and to their associates, as proprietors of Carolina. The genius of John Locke, more fitted for philosophy than affairs, devised a constitution for the colony, — an idle work, as it proved. In 1670, the first emigrants, under Governor William Sayle, arrived at Port Royal, with the purpose to remain there; but, disturbed probably with apprehensions of Spanish incursions from Florida, they removed to the banks of the Ashley, and, after another change of site, founded Charleston.

In 1682, a colony from Scotland under Lord Cardross was founded at Port Royal, but was driven away four years later by the Spanish. No permanent settlement of the Beaufort district appears to have succeeded until 1700. This district is divided into four parishes, St. Peter's, St. Luke's, St. Helena, and Prince William, being fifty-eight miles long and thirty-two broad, and containing 1,224,960 acres. St. Helena parish includes the islands of St. Helena, Ladies, Port Royal, Paris, and a few smaller islands, which, together with Hilton Head, make the district occupied by our forces. The largest and most populous of these islands is St. Helena, being fifteen miles long and six or seven broad, containing fifty plantations and three thousand negroes, and perhaps more since the evacuation of Edisto. Port Royal is two-thirds or three-quarters the size of St. Helena, Ladies half as large, and Hilton Head one-third as large. Paris, or Parry, has five plantations, and Coosaw, Morgan, Cat, Cane, and Barnwell have each one or two. Beaufort is the largest town in the district of that name, and the only one at Port Royal in our possession. Its population, black and white, in time of peace may have been

between two and three thousand. The first lots were granted in 1717. Its Episcopal church was built in 1720. Its library was instituted in 1802, had increased in 1825 to six or eight hundred volumes, and when our military occupation began contained about thirty-five hundred.

The origin of the name Port Royal, given to a harbor at first and since to an island, has already been noted. The name of St. Helena, applied to a sound, a parish, and an island, originated probably with the Spaniards, and was given by them in tribute to Saint Helena, the mother of Constantine the Great, whose day in the calendar is August 18th. Broad River is the equivalent of La Grande, which was given by Ribault. Hilton Head may have been derived from Captain Hilton, who came from Barbados. Coosaw is the name of a tribe of Indians. Beaufort is likely to have been so called for Henry, Duke of Beauford, one of the lord proprietors, while Carolina was a province of Great Britain.

The Beaufort District is not invested with any considerable Revolutionary romance. In 1779, the British forces holding Savannah sent two hundred troops with a howitzer and two field-pieces to Beaufort. Four companies of militia from Charleston with two field-pieces, reinforced by a few volunteers from Beaufort, repulsed and drove them off. The British made marauding incursions from Charleston in 1782, and are said to have levied a military contribution on St. Helena and Port Royal Islands.

There are the remains of Indian mounds and ancient forts on the islands. One of these last, it is said, can be traced on Paris Island, and is claimed by some antiquaries to be the Charles Fort built by Ribault. There are the well-preserved walls of one upon the plantation of John J. Smith on Port Royal Island, a few miles south of Beaufort, now called Camp Saxton, and recently occupied by Colonel Higginson's regiment. It is built of cemented oyster-shells. Common remark refers to it as a Spanish fort, but it is likely to be of English construction. The site of Charles Fort is claimed for Beaufort, Lemon Island, Paris Island, and other points.

The Sea Islands are formed by the intersection of the creeks and arms of the sea. They have a uniform level, are without any stones, and present a rather monotonous and uninteresting scenery, spite of the raptures of French explorers. The creeks run up into the islands at numerous points, affording facilities for transportation by flats and boats to the buildings which are usually near them. The soil is of a light, sandy mould, and yields in the best seasons a very moderate crop, say fifteen bushels of corn and one hundred or one hundred and thirty pounds of ginned cotton to the acre, — quite different from the plantations in Mississippi and Texas, where an acre produces five or six hundred pounds. The soil is not rich enough for the cultivated grasses, and one finds but little turf. The coarse saline grasses, gathered in stacks, furnish the chief material for manure. The long-fibred cotton peculiar to the region is the result of the climate, which is affected by the action of the salt water upon the atmosphere by means of the creeks which permeate the land in all directions. The seed of this cotton, planted on the upland, will produce in a few years the cotton of coarser texture; and the seed of the latter, planted on the islands, will in a like period produce the finer staple. The Treasury Department secured eleven hundred thousand pounds from the islands occupied by our forces, including Edisto, being the crop, mostly unginned, and gathered in storehouses, when our military occupation began.

The characteristic trees are the live-oak, its wood almost as heavy as lignum-vitæ, the trunk not high, but sometimes five or six feet in diameter, and extending its crooked branches far over the land, with the long, pendulous, funereal moss adhering to them, — and the palmetto, shooting up its long, spongy stem thirty or forty feet, unrelieved by

vines or branches, with a disproportionately small cap of leaves at the summit, the most ungainly of trees, albeit it gives a name and coat-of-arms to the State. Besides these, are the pine, the red and white oak, the cedar, the bay, the gum, the maple, and the ash. The soil is luxuriant with an undergrowth of impenetrable vines. These interlacing the trees, supported also by shrubs, of which the cassena is the most distinguished variety, and faced with ditches, make the prevailing fences of the plantations. The hedges are adorned in March and April with the yellow jessamine, (*jelseminum*,) — the cross-vine (*bignonia*,) with its mass of rich red blossoms, — the Cherokee rose, (*lævigata*,) spreading out in long waving wreaths of white, — and, two months later, the palmetto royal, (*yucca gloriosa*,) which protects the fence with its prickly leaves, and delights the eyes with its pyramid-like clusters of white flowers. Some of these trees and shrubs serve a utilitarian end in art and medicine. The live-oak is famous in shipbuilding. The palmetto, or cabbage-palmetto, as it is called, resists destruction by worms, and is used for facing wharves. It was employed to protect Fort Moultrie in 1776, when bombarded by the British fleet; and the cannon-balls were buried in its spongy substance. The moss *(tillandsia usneoides)* served to calk the rude vessel of the first French colonists, longing for home. It may be used for bedding after its life has been killed by boiling water, and for the subsistence of cattle when destitute of other food. The cassena is a powerful diuretic.

The game and fish, which are both abundant and of desirable kinds, and to the pursuit of which the planters were much addicted, are described in Eliot's book. Russell's "Diary" may also be consulted in relation to fishing for devil and drum.

The best dwellings in Beaufort are capacious, with a piazza on the first and second stories, through each of which runs a large hall to admit a free circulation of air. Only one, however, appeared to have been built under the supervision of a professional architect. Those on the plantations, designed for the planters or overseers, were, with a few exceptions, of a very mean character, and a thriving mechanic in New England would turn his back on them as unfit to live in. Their yards are without turf, having as their best feature a neighboring grove of orange-trees. One or two dwellings only appear to be ancient. Indeed, they are not well enough built to last long. The estates upon Edisto Island are of a more patrician character, and are occasionally surrounded by spacious flower-gardens and ornamental trees fancifully trimmed.

The names of the planters indicated mainly an English origin, although some may be traced to Huguenot families who sought a refuge here from the religious persecutions of France.

The deserted houses were generally found strewn with religious periodicals, mainly Baptist magazines. This characteristic of Southern life has been elsewhere observed in the progress of our army. Occasionally some book denouncing slavery as criminal and ruinous was found among those left behind. One of these was Hewatt's history of South Carolina, published in 1779, and reprinted in Carroll's collection. Another was Grégoire's vindication of the negro race and tribute to its distinguished examples, translated by Warden in 1810. These people seem, indeed, to have had light enough to see the infinite wrong of the system, and it is difficult to believe them entirely sincere in their passionate defence of it. Their very violence, when the moral basis of slavery is assailed, seems to be that of a man who distrusts the rightfulness of his daily conduct, has resolved to persist in it, and therefore hates most of all the prophet who comes to confront him for his misdeeds, and, if need be, to publish them to mankind.

Well-authenticated instances of cruelty to slaves were brought to notice without

being sought for. The whipping-tree is now often pointed out, still showing the place where it was worn by the rope which bound the sufferer to it. On the plantation where my own quarters were was a woman who had been so beaten when approaching the trials of maternity as to crush out the life of the unborn child. But this planter had one daughter who looked with horror on the scenes of which she was the unwilling witness. She declared to her parents and sisters that it was hell to live in such a place. She was accustomed to advise the negroes how best to avoid being whipped. When the war began, she assured them that the story of the masters that the Yankees were going to send them to Cuba was all a lie. Surely a kind Providence will care for this noble girl! This war will, indeed, emancipate others than blacks from bonds which marriage and kindred have involved. But it is unpleasant to dwell on these painful scenes of the past, constant and authentic as they are; and they hardly concern the practical question which now presses for a solution. Nor in referring to them is there any need of injustice or exaggeration. Human nature has not the physical endurance or moral persistence to keep up a perpetual and universal cruelty; and there are fortunate slaves who never received a blow from their masters. Besides, there was less labor exacted and less discipline imposed on the loosely managed plantations of the Sea Islands than in other districts where slave-labor was better and more profitably organized and directed.

The capture of Hilton Head and Bay Point by the navy, November 7th, 1861, was followed by the immediate military occupation of the Sea Islands. In the latter part of December, the Secretary of the Treasury, Mr. Chase, whose foresight as a statesman and humane disposition naturally turned his thoughts to the subject, deputed a special agent to visit this district for the purpose of reporting upon the condition of the negroes who had been abandoned by the white population, and of suggesting some plan for the organization of their labor and the promotion of their general well-being. The agent, leaving New York January 13th, 1862, reached that city again on his way to Washington on the 13th of February, having in the mean time visited a large number of the plantations, and talked familiarly with the negroes in their cabins. The results of his observations, in relation to the condition of the people, their capacities and wishes, the culture of their crops, and the best mode of administration, on the whole favorable, were embodied in a report. The plan proposed by him recommended the appointment of superintendents to act as guides of the negroes and as local magistrates, with an adequate corps of teachers. It was accepted by the Secretary with a full indorsement, and its execution intrusted to the same agent. The agent presented the subject to several members of Congress, with whom he had a personal acquaintance, but, though they listened respectfully, they seemed either to dread the magnitude of the social question, or to feel that it was not one with which they as legislators were called upon immediately to deal. The Secretary himself, and Mr. Olmsted, then connected with the Sanitary Commission, alone seemed to grasp it, and to see the necessity of immediate action. It is doubtful if any member of the Cabinet, except Mr. Chase, took then any interest in the enterprise, though it has since been fostered by the Secretary of War. At the suggestion of the Secretary, the President appointed an interview with the agent. Mr. Lincoln, who was then chafing under a prospective bereavement, listened for a few moments, and then said, somewhat impatiently, that he did not think he ought to be troubled with such details,—that there seemed to be an itching to get negroes into our lines; to which the agent replied, that these negroes were within them by the invitation of no one, being domiciled there before we commenced occupation. The President then

wrote and handed to the agent the following card: —

"I shall be obliged if the Sec. of the Treasury will in his discretion give Mr. Pierce such instructions in regard to Port Royal contrabands as may seem judicious.

"A. LINCOLN.

"Feb. 15, 1862."

The President, so history must write it, approached the great question slowly and reluctantly; and in February, 1862, he little dreamed of the proclamations he was to issue in the September and January following. Perhaps that slowness and reluctance were well, for thereby it was given to this people to work out their own salvation, rather than to be saved by any chief or prophet.

Notwithstanding the plan of superintendents was accepted, there were no funds wherewith to pay them. At this stage the "Educational Commission," organized in Boston on the 7th of February, and the "Freedmen's Relief Association," organized in New York on the 20th of the same month, gallantly volunteered to pay both superintendents and teachers, and did so until July 1st, when the Government, having derived a fund from the sale of confiscated cotton left in the territory by the Rebels, undertook the payment of the superintendents, the two societies, together with another organized in Philadelphia on the 3d of March, and called the "Port Royal Relief Committee," providing for the support of the teachers.

When these voluntary associations sprang into being to save an enterprise which otherwise must have failed, no authoritative assurance had been given as to the legal condition of the negroes. The Secretary, in a letter to the agent, had said, that, after being received into our service, they could not, without great injustice, be restored to their masters, and should therefore be fitted to become self-supporting citizens. The President was reported to have said freely, in private, that negroes who were within our lines, and had been employed by the Government, should be protected in their freedom. No official assurance of this had, however, been given; and its absence disturbed the societies in their formation. At one meeting of the Boston society action was temporarily arrested by the expression of an opinion by a gentleman present, that there was no evidence showing that these people, when educated, would not be the victims of some unhappy compromise. A public meeting in Providence, for their relief, is said to have broken up without action, because of a speech from a furloughed officer of a regiment stationed at Port Royal, who considered such a result the probable one. But the societies, on reflection, wisely determined to do what they could to prepare them to become self-supporting citizens, in the belief, that, when they had become such, no Government could ever be found base enough to turn its back upon them. These associations, it should be stated, have been managed by persons of much consideration in their respective communities, of unostentatious philanthropy, but of energetic and practical benevolence, hardly one of whom has ever filled or been a candidate for a political office.

There was a pleasant interview at this time which may fitly be mentioned. The venerable Josiah Quincy, just entered on his ninety-first year, hearing of the enterprise, desired to see one who had charge of it. I went to his chamber, where he had been confined to his bed for many weeks with a fractured limb. He talked like a patriot who read the hour and its duty. He felt troubled lest adequate power had not been given to protect the enterprise, — said that but for his disability he should be glad to write something about it, but that he was living "the postscript of his life"; and as we parted, he gave his hearty benediction to the work and to myself. Restored in a measure to activity, he is still spared to the generation which fondly cherishes his old age; and recently, at the organization of the Union Club, he read to his fellow-citi-

zens, gathering close about him and hanging on his speech, words of counsel and encouragement.

On the morning of the 3d of March, 1862, the first delegation of superintendents and teachers, fifty-three in all, of whom twelve were women, left the harbor of New York, on board the United States steam-transport Atlantic, arriving at Beaufort on the 9th. It was a voyage never to be forgotten. The enterprise was new and strange, and it was not easy to predict its future. Success or defeat might be in store for us; and we could only trust in God that our strength would be equal to our responsibilities. As the colonists approached the shores of South Carolina, they were addressed by the agent in charge, who told them the little he had learned of their duties, enjoined patience and humanity, impressed on them the greatness of their work, the results of which were to cheer or dishearten good men, to settle, perhaps, one way or the other, the social problem of the age, — assuring them that never did a vessel bear a colony on a nobler mission, not even the Mayflower, when she conveyed the Pilgrims to Plymouth, that it would be a poorly written history which should omit their individual names, and that, if faithful to their trust, there would come to them the highest of all recognitions ever accorded to angels or to men, in this life or the next, — "Inasmuch as ye have done it unto the least of these, ye have done it unto Me."

This first delegation of superintendents and teachers were distributed during the first fortnight after their arrival at Beaufort, and at its close they had all reached their appointed posts. They took their quarters in the deserted houses of the planters. These had all left on the arrival of our army, only four white men, citizens of South Carolina, remaining, and none of those being slaveholders, except one, who had only two or three slaves. Our operations were, therefore, not interfered with by landed proprietors who were loyal or pretended to be so. The negroes had, in the mean time, been without persons to guide and care for them, and had been exposed to the careless and conflicting talk of soldiers who chanced to meet them. They were also brought in connection with some *employés* of the Government, engaged in the collection of cotton found upon the plantations, none of whom were doing anything for their education, and most of whom were in favor of leasing the plantations and the negroes upon them as *adscripti glebæ*, looking forward to their restoration to their masters at the close of the war. They were uncertain as to the intentions of the Yankees, and were wondering at the confusion, as they called it. They were beginning to plant corn in their patches, but were disinclined to plant cotton, regarding it as a badge of servitude. No schools had been opened, except one at Beaufort, which had been kept a few weeks by two freedmen, one bearing the name of John Milton, under the auspices of the Rev. Dr. Peck. This is not the place to detail the obstacles we met with, one after another overcome, — the calumnies and even personal violence to which we were subjected. These things occurred at an early period of our struggle, when the nation was groping its way to light, and are not likely to occur again. Let unworthy men sleep in the oblivion they deserve, and let others of better natures, who were then blind, but now see, not be taunted with their inconsiderate acts. The nickname of Gibeonites, applied to the colonists, may, however, be fitly remembered. It may now justly claim rank with the honored titles of Puritan and Methodist. The higher officers of the army were uniformly respectful and disposed to coöperation. One of these may properly be mentioned. Our most important operations were in the district under the command of Brigadier-General Isaac I. Stevens, an officer whose convictions were not supposed to be favorable to the enterprise, and who, during the political contest of 1860, had been the chairman of the National Breckinridge Committee. But such was his honor as a gentleman, and his sense of the

duty of subordination to the wishes of the Government, that his personal courtesies and official aid were never wanting. He received his mortal wound at Chantilly, Virginia, on the first of September following, and a braver and abler officer has not fallen in the service.

Notwithstanding our work was commenced six weeks too late, and other hindrances occurred, detailed in the second report of the agent, some eight thousand acres of esculents, — a fair supply of food, — and some four thousand five hundred acres of cotton (after a deduction for over-estimates) were planted. This was done upon one hundred and eighty-nine plantations, on which were nine thousand and fifty people, of whom four thousand four hundred and twenty-nine were field-hands, made up of men, women, and children, and equivalent, in the usual classification and estimate of the productive capacity of laborers, to three thousand eight hundred and five and one-half full hands. The cotton-crop produced will not exceed sixty-five thousand pounds of ginned cotton. Work enough was done to have produced five hundred thousand pounds in ordinary times; but the immaturity of the pod, resulting from the lateness of the planting, exposed it to the ravages of the frost and the worm. Troops being ordered North, after the disasters of the Peninsular campaign, Edisto was evacuated in the middle of July, and thus one thousand acres of esculents, and nearly seven hundred acres of cotton, the cultivation of which had been finished, were abandoned. In the autumn, Major-General Mitchell required forty tons of corn-fodder and seventy-eight thousand pounds of corn in the ear, for army-forage. These are but some of the adverse influences to which the agricultural operations were subjected.

It is fitting here that I should bear my testimony to the superintendents and teachers commissioned by the associations. There was as high a purpose and devotion among them as in any colony that ever went forth to bear the evangel of civilization. Among them were some of the choicest young men of New England, fresh from Harvard, Yale, and Brown, from the divinity-schools of Andover and Cambridge, — men of practical talent and experience. There were some of whom the world was scarce worthy, and to whom, whether they are among the living or the dead, I delight to pay the tribute of my respect and admiration.

Four of the original delegation have died. William S. Clark died at Boston, April 25th, 1863, a consumptive when he entered on the work, which he was obliged to leave six months before his death. He was a faithful and conscientious teacher. Though so many months had passed since he left these labors, their fascination was such that he dwelt fondly upon them in his last days.

The colony was first broken by the death of Francis E. Barnard, at St. Helena Island, October 18th, 1862. He was devoted, enthusiastic, — and though not fitted, as it at first appeared, for the practical duties of a superintendent, yet even in this respect disappointing me entirely. He was an evangelist, also, and he preached with more unction than any other the gospel of freedom, — always, however, enforcing the duties of industry and self-restraint. He was never sad, but always buoyant and trustful. He and a comrade were the first to be separated from the company, while at Hilton Head, and before the rest went to Beaufort, — being assigned to Edisto, which had been occupied less than a month, and was a remote and exposed point; but he went fearlessly and without question. The evacuation of Edisto in July, the heat, and the labor involved in bringing away and settling his people at the village on St. Helena Island, a summer resort of the former residents, where were some fifty vacant houses, were too much for him. His excessive exertions brought on malarious fever. This produced an unnatural excitement, and at mid-day, under a hot sun, he rode about to attend to his people. He died, — men, women, and children, for whom he had toiled, filling the house with

their sobs during his departing hours. His funeral was thronged by them, his coffin strewn with flowers which they and his comrades had plucked, and then his remains were borne to his native town, where burial-rites were again performed in the old church of Dorchester. Read his published journal, and find how a noble youth can live fourscore years in a little more than one score. One high privilege was accorded to him. He lived to hear of the immortal edict of the twenty-second of September, by which the freedom of his people was to be secured for all time to come.

Samuel D. Phillips was a young man of much religious feeling, though he never advertised himself as having it, and a devout communicant of the Episcopal Church. He was a gentleman born and bred, inheriting the quality as well as adding to it by self-discipline. He had good business-capacity, never complained of inconveniences, was humane, yet not misled by sentiment, and he gave more of his time, otherwise unoccupied, to teaching than almost any other superintendent. I was recently asking the most advanced pupils of a school on St. Helena who first taught them their letters, and the frequent answer was, "Mr. Phillips." He was at home in the autumn for a vacation, was at the funeral of Barnard in Dorchester, and though at the time in imperfect health, he hastened back to his charge, feeling that the death of Barnard, whose district was the same as his own, rendered his immediate return necessary to the comfort of his people. He went, — but his health never came back to him. His quarters were in the same house where Barnard had died, and in a few days, on the 5th of December, he followed him. He was tended in his sickness by the negroes, and one day, having asked that his pillow might be turned, he uttered the words, "Thank God," and died. There was the same grief as at Barnard's death, the same funeral-rites at the St. Helena Church, and his remains were borne North to bereaved relatives.

Daniel Bowe was an alumnus of Yale College, and a student of the Andover Theological Seminary, not yet graduated when he turned from his professional studies at the summons of Christian duty. He labored faithfully as a superintendent, looking after the physical, moral, and educational interests of his people. He had a difficult post, was overburdened with labor, and perhaps had not the faculty of taking as good care of himself as was even consistent with his duties. He came home in the summer, commended the enterprise and his people to the citizens and students of Andover, and returned. He afterwards fell ill, and, again coming North, died October 30th, a few days after reaching New York. The young woman who was betrothed to him, but whom he did not live to wed, has since his death sought this field of labor; and on my recent visit I found her upon the plantation where he had resided, teaching the children whom he had first taught, and whose parents he had guided to freedom. Truly, the age of Christian romance has not passed away!

On the first of July, 1862, the administration of affairs at Port Royal having been transferred from the Treasury to the War Department, the charge of the freedmen passed into the hands of Brigadier-General Rufus Saxton, a native of Massachusetts, who in childhood had breathed the free air of the valley of the Connecticut, a man of sincere and humane nature; and under his wise and benevolent care they still remain. The Sea Islands, and also Fernandina and St. Augustine in Florida, are within our lines in the Department of the South, and some sixteen or eighteen thousand negroes are supposed to be under his jurisdiction.

The negroes of the Sea Islands, when found by us, had become an abject race, more docile and submissive than those of any other locality. The native African was of a fierce and mettlesome temper, sullen and untamable. The master was obliged to abate something of the

usual rigor in dealing with the imported slaves. A tax-commissioner, now at Port Royal, and formerly a resident of South Carolina, told me that a native African belonging to his father, though a faithful man, would perpetually insist on doing his work in his own way, and being asked the threatening question, "A'n't you going to mind?" would answer, with spirit, "No, a'n't gwine to!" and the master desisted. Severe discipline drove the natives to the wilderness, or involved a mutilation of person which destroyed their value for proprietary purposes. In 1816, eight hundred of these refugees were living free in the swamps and everglades of Florida. There the ancestors of some of them had lived ever since the early part of the eighteenth century, rearing families, carrying on farms, and raising cattle. They had two hundred and fifty men fit to bear arms, led by chiefs brave and skilful. The story of the Exiles of Florida is one of painful interest. The testimony of officers of the army who served against them is, that they were more dangerous enemies than the Indians, fighting the most skilfully and standing the longest. The tax-commissioner before referred to, who was a resident of Charleston during the trial and execution of the confederates of Denmark Vesey, relates that one of the native Africans, when called to answer to the charge against him, haughtily responded, —"*I was a prince in my country, and have as much right to be free as you!*" The Carolinians were so awe-struck by his defiance that they transported him. Another, at the execution, turned indignantly to a comrade about to speak, and said, "*Die silent, as I do!*" and the man hushed. The early newspapers of Georgia recount the disturbances on the plantations occasioned by these native Africans, and even by their children, being not until the third generation reduced to obedient slaves.

Nowhere has the deterioration of the negroes from their native manhood been carried so far as on these Sea Islands, — a deterioration due to their isolation from the excitements of more populous districts, the constant surveillance of the overseers, and their intermarriage with each other, involving a physical degeneracy with which inexorable Nature punishes disobedience to her laws. The population with its natural increase was sufficient for the cultivation of the soil under existing modes, and therefore no fresh blood was admitted, such as is found pouring from the Border States into the sugar and cotton regions of the Southwest. This unmanning and depravation of the native character had been carried so far, that the special agent, on his first exploration, in January, 1862, was obliged to confess the existence of a general disinclination to military service on the part of the negroes; though it is true that even then instances of courage and adventure appeared, which indicated that the more manly feeling was only latent, to be developed under the inspiration of events. And so, let us rejoice, it has been. You may think yourself wise, as you note the docility of a subject race; but in vain will you attempt to study it until the burden is lifted. The slave is unknown to all, even to himself, while the bondage lasts. Nature is ever a kind mother. She soothes us with her deceits, not in surgery alone, when the sufferer, else writhing in pain, is transported with the sweet delirium, but she withholds from the spirit the sight of her divinity until her opportunity has come. Not even Tocqueville or Olmsted, much less the master, can measure the capacities and possibilities of the slave, until the slave himself is transmuted to a man.

My recent visit to Port Royal extended from March 25th to May 10th. It was pleasant to meet the first colonists, who still toiled at their posts, and specially grateful to receive the welcome of the freedmen, and to note the progress they had made. There were interesting scenes to fill the days. I saw an aged negro, Cæsar by name, not less than one hundred years old, who had left children in Africa, when stolen away. The vicissi-

tudes of such a life were striking, — a free savage in the wilds of his native land, a prisoner on a slave-ship, then for long years a toiling slave, now again a freeman under the benign edict of the President, — his life covering an historic century. A faithful and industrious negro, Old Simon, as we called him, hearing of my arrival, rode over to see me, and brought me a present of two or three quarts of pea-nuts and some seventeen eggs. I had an interview with Don Carlos, whom I had seen in May, 1862, at Edisto, the faithful attendant upon Barnard, and who had been both with him and Phillips during their last hours, — now not less than seventy years of age, and early in life a slave in the Alston family, where he had known Theodosia Burr, the daughter of Aaron Burr, and wife of Governor Alston. He talked intelligently upon her personal history and her mysterious fate. He had known John Pierpont, when a teacher in the family of Colonel Alston, and accompanying the sons on their way North to college after the completion of their preparatory studies. Pierpont was a classmate of John C. Calhoun at Yale College, and, upon graduating, went South as a private tutor.

Aunt Phillis was not likely to be overlooked, — an old woman, with much power of expression, living on the plantation where my quarters had formerly been. The attack on Charleston was going on, and she said, "If you 're as long beating Secesh everywhere as you have been in taking the town, guess it 'll take you some time!" Indeed, the negroes had somewhat less confidence in our power than at first, on account of our not having followed up the capture of Bay Point and Hilton Head. The same quaint old creature, speaking of the disregard of the masters for the feelings of the slaves, said, with much emphasis, "They thought God was dead!"

I visited Barnwell Island, the only plantation upon which is that of Trescot, formerly Secretary of Legation at London, a visit to whom Russell describes in his "Diary." But the mansion is not now as when Russell saw it. Its large library is deposited in the Smithsonian Institution at Washington. Its spacious rooms in the first and second stories, together with the attics, are all filled with the families of negro refugees. From this point, looking across the water, we could see a cavalry-picket of the Rebels. The superintendent who had charge of the plantation, and accompanied me, was Charlès Follen, an inherited name, linked with the struggles for freedom in both hemispheres.

The negro graveyards occasionally attracted me from the road. They are usually in an open field, under a clump of some dozen or twenty trees, perhaps live-oaks, and not fenced. There may be fifty or a hundred graves, marked only by sticks eighteen inches or two feet high and about as large as the wrist. Mr. Olmsted saw some stones in a negro graveyard at Savannah, erected by the slaves, and bearing rather illiterate inscriptions; but I never succeeded in finding any but wooden memorials, not even at Beaufort. Only in one case could I find an inscription, and that was in a burial-place on Ladies Island. There was a board at the head of the grave, shaped something like an ordinary gravestone, about three feet high and six inches wide. The inscription was as follows: —

OLd Jiw
de PArt his
Life on the
2 of WAY
Re st frow
LAuer

On the foot-board were these words: —

We ll
d OW N.

The rude artist was Kit, the son of the old man. He can read, and also write a little, and, like his deceased father, is a negro preacher. He said that he used to carry his father in his arms in his old age, — that the old man had no pain, and, as the son expressed it, "sunk in years." I inquired of Kit concerning several of the graves; and I found, by his intelli-

gent answers, that their tenants were disposed in families and were known. These lowly burial-places, for which art has done nothing, are not without a fascination, and in some hours of life they take a faster hold on the sentiments than more imposing cemeteries, adorned with shafts of marble and granite, and rich in illustrious dead.

There were some superstitions among the people, perhaps of African origin, which the teachers had detected, such as a belief in hags as evil spirits, and in a kind of witchcraft which only certain persons can cure. They have a superstition, that, when you take up and remove a sleeping child, you must call its spirit, else it will cry, on awaking, until you have taken it back to the same place and invoked its spirit. They believe that turning an alligator on his back will bring rain; and they will not talk about one when in a boat, lest a storm should thereby be brought on.

But the features in the present condition of the freedmen bearing directly on the solution of the social problem deserve most consideration.

And, first, as to *education*. There are more than thirty schools in the territory, conducted by as many as forty or forty-five teachers, who are commissioned by the three associations in Boston, New York, and Philadelphia, and by the American Missionary Association. They have an average attendance of two thousand pupils, and are more or less frequented by an additional thousand. The ages of the scholars range in the main from eight to twelve years. They did not know even their letters prior to a year ago last March, except those who were being taught in the single school at Beaufort already referred to, which had been going on for a few weeks. Very many did not have the opportunity for instruction till weeks and even months after. During the spring and summer of 1862 there were not more than a dozen schools, and these were much interrupted by the heat, and by the necessity of assigning at times some of the teachers to act as superintendents. Teachers came for a brief time, and upon its expiration, or for other cause, returned home, leaving the schools to be broken up. It was not until October or November that the educational arrangements were put into much shape; and they are still but imperfectly organized. In some localities there is as yet no teacher, and this because the associations have not had the funds wherewith to provide one.

I visited ten of the schools, and conversed with the teachers of others. There were, it may be noted, some mixed bloods in the schools of the town of Beaufort,—ten in a school of ninety, thirteen in another of sixty-four, and twenty in another of seventy. In the schools on the plantations there were never more than half a dozen in one school, in some cases but two or three, and in others none.

The advanced classes were reading simple stories and didactic passages in the ordinary school-books, as Hillard's Second Primary Reader, Willson's Second Reader, and others of similar grade. Those who had enjoyed a briefer period of instruction were reading short sentences or learning the alphabet. In several of the schools a class was engaged on an elementary lesson in arithmetic, geography, or writing. The eagerness for knowledge and the facility of acquisition displayed in the beginning had not abated.

On the 25th of March I visited a school at the Central Baptist Church on St. Helena Island, built in 1855, shaded by lofty live-oak trees, with the long, pendulous moss everywhere hanging from their wide-spreading branches, and surrounded by the gravestones of the former proprietors, which bear the ever-recurring names of Fripp and Chaplin. This school was opened in September last, but many of the pupils had received some instruction before. One hundred and thirty-one children were present on my first visit, and one hundred and forty-five on my second, which was a few days later. Like most of the schools on the plantations, it opened at noon and closed at

three o'clock, leaving the forenoon for the children to work in the field or perform other service in which they could be useful. One class, of twelve pupils, read page 70th in Willson's Reader, on "Going Away." They had not read the passage before, and they went through it with little spelling or hesitation. They had recited the first thirty pages of Towle's Speller, and the multiplication-table as high as fives, and were commencing the sixes. A few of the scholars, the youngest, or those who had come latest to the school, were learning the alphabet. At the close of the school, they recited in concert the Psalm, "The Lord is my shepherd," requiring prompting at the beginning of some of the verses. They sang with much spirit hymns which had been taught them by the teachers, as, —

"My country, 't is of thee,
Sweet land of liberty";

also, —

"Sound the loud timbrel";

also, Whittier's new song, written expressly for this school, the closing stanzas of which are, —

"The very oaks are greener clad,
The waters brighter smile;
Oh, never shone a day so glad
On sweet St. Helen's Isle!

"For none in all the world before
Were ever glad as we, —
We 're free on Carolina's shore,
We 're all at home and free!"

Never has that pure Muse, which has sung only of truth and right, as the highest beauty and noblest art, been consecrated to a better service than to write the songs of praise for these little children, chattels no longer, whom the Saviour, were he now to walk on earth, would bless as his own.

The prevalent song, however, heard in every school, in church, and by the way-side, is that of "John Brown," which very much amuses our white soldiers, particularly when the singers roll out, —

'We 'll hang Jeff Davis on a sour apple tree!"

The children also sang their own songs, as, —

"In de mornin' when I rise,
Tell my Jesus, Huddy oh? *
In de mornin' when I rise,
Tell my Jesus, Huddy oh?

"I wash my hands in de mornin' glory,
Tell my Jesus, Huddy oh?
I wash my hands in de mornin' glory,
Tell my Jesus, Huddy oh?

"Pray, Tony, pray, boy, you got de order,
Tell my Jesus, Huddy oh?
Pray, Tony, pray, boy, you got de order,
Tell my Jesus, Huddy oh?

"Pray, Rosy, pray, gal," etc.

Also, —

"I would not let you go, my Lord,
I would not let you go,
I would not let you go, my Lord,
I would not let you go.

"Dere 's room enough, dere 's room enough,
Dere 's room enough in de heab'nly groun',
Dere 's room enough, dere's room enough,
I can't stay behin'.

"I can't stay behin', my Lord,
I can't stay behin',
I can't stay behin', my Lord,
I can't stay behin'.

"De angels march all roun' de trone,
De angels march all roun' de trone,
De angels march all roun' de trone,
I can't stay behin'.

"I can't stay behin', my Lord,
I can't stay behin',
I can't stay behin', my Lord,
I can't stay behin'.

"Dere 's room enough," etc.

Other songs of the negroes are common, as, "The Wrestling Jacob," "Down in the lonesome valley," "Roll, Jordan, roll," "Heab'n shall-a be my home." Russell's "Diary" gives an account of these songs, as he heard them in his evening row over Broad River, on his way to Trescot's estate.

One of the teachers of this school is an accomplished woman from Philadelphia.

* How d' y' do?

Another is from Newport, Rhode Island, where she had prepared herself for this work by benevolent labors in teaching poor children. The third is a young woman of African descent, of olive complexion, finely cultured, and attuned to all beautiful sympathies, of gentle address, and, what was specially noticeable, not possessed with an overwrought consciousness of her race. She had read the best books, and naturally and gracefully enriched her conversation with them. She had enjoyed the friendship of Whittier; had been a pupil in the Grammar-School of Salem, then in the State Normal School in that city, then a teacher in one of the schools for white children, where she had received only the kindest treatment both from the pupils and their parents, — and let this be spoken to the honor of that ancient town. She had refused a residence in Europe, where a better social life and less unpleasant discrimination awaited her, for she would not dissever herself from the fortunes of her people; and now, not with a superficial sentiment, but with a profound purpose, she devotes herself to their elevation.

At Coffin Point, on St. Helena Island, I visited a school kept by a young woman from the town of Milton, Massachusetts, "the child of parents passed into the skies," whose lives have both been written for the edification of the Christian world. She teaches two schools, at different hours in the afternoon, and with different scholars in each. One class had read through Hillard's Second Primary Reader, and were on a review, reading Lessons 19, 20, and 21, while I was present. Being questioned as to the subjects of the lessons, they answered intelligently. They recited the twos of the multiplication-table, explained numeral letters and figures on the blackboard, and wrote letters and figures on slates. Another teacher in the adjoining district, a graduate of Harvard, and the son of a well-known Unitarian clergyman of Providence, Rhode Island, has two schools, in one of which a class of three pupils was about finishing Ellsworth's First Progressive Reader, and another, of seven pupils, had just finished Hillard's Second Primary Reader. Another teacher, from Cambridge, Massachusetts, on the same island, numbers one hundred pupils in his two schools. He exercises a class in elocution, requiring the same sentence to be repeated with different tones and inflections, and one could not but remark the excellent imitations.

In a school at St. Helena village, where were collected the Edisto refugees, ninety-two pupils were present as I went in. Two ladies were engaged in teaching, assisted by Ned Loyd White, a colored man, who had picked up clandestinely a knowledge of reading while still a slave. One class of boys and another of girls read in the seventh chapter of St. John, having begun this Gospel and gone thus far. They stumbled a little on words like "unrighteousness" and "circumcision"; otherwise they got along very well. When the Edisto refugees were brought here, in July, 1862, Ned, who is about forty or forty-five years old, and Uncle Cyrus, a man of seventy, who also could read, gathered one hundred and fifty children into two schools, and taught them as best they could for five months until teachers were provided by the societies. Ned has since received a donation from one of the societies, and is now regularly employed on a salary. A woman comes to one of the teachers of this school for instruction in the evening, after she has put her children to bed. She had become interested in learning by hearing her younger sister read when she came home from school; and when she asked to be taught, she had learned from this sister the alphabet and some words of one syllable. Only a small proportion of the adults are, however, learning.

On the 8th of April, I visited a school on Ladies Island, kept in a small church on the Eustis estate, and taught by a young woman from Kingston, Massachusetts. She had manifested much persistence in going to this field, went with the

first delegation, and still keeps the school which she opened in March, 1862. She taught the pupils their letters. Sixty-six were present on the day of my visit. A class of ten pupils read the story which commences on page 86th of Hillard's Second Primary Reader. One girl, Elsie, a full black, and rather ungainly withal, read so rapidly that she had to be checked, — the only case of such fast reading that I found. She assisted the teacher by taking the beginners to a corner of the room and exercising them upon an alphabet card, requiring them to give the names of letters taken out of their regular order, and with the letters making words, which they were expected to repeat after her. One class recited in Eaton's First Lessons in Arithmetic; and two or three scholars with a rod pointed out the states, lakes, and large rivers on the map of the United States, and also the different continents on the map of the world, as they were called. I saw the teacher of this school at her residence, late in the afternoon, giving familiar instruction to some ten boys and girls, all but two being under twelve years, who read the twenty-first chapter of the Book of Revelation, and the story of Lazarus in the eleventh chapter of St. John. Elsie was one of these. Seeing me taking notes, she looked archly at the teacher, and whispered, — "He 's putting me in the book"; and as Elsie guessed, so I do. The teacher was instructing her pupils in some dates and facts which have had much to do with our history. The questions and answers, in which all the pupils joined, were these: —

"Where were slaves first brought to this country?"

"Virginia."

"When?"

"1620."

"Who brought them?"

"Dutchmen."

"Who came the same year to Plymouth, Massachusetts?"

"Pilgrims."

"Did they bring slaves?"

"No."

A teacher in Beaufort put these questions, to which answers were given in a loud tone by the whole school: —

"What country do you live in?"

"United States."

"What State?"

"South Carolina."

"What island?"

"Port Royal."

"What town?"

"Beaufort."

"Who is your Governor?"

"General Saxton."

"Who is your President?"

"Abraham Lincoln."

"What has he done for you?"

"He 's freed us."

There were four schools in the town of Beaufort, all of which I visited, each having an average attendance of from sixty to ninety pupils, and each provided with two teachers. In some of them writing was taught. But it is unnecessary to describe them, as they were very much like the others. There is, besides, at Beaufort an industrial school, which meets two afternoons in a week, and is conducted by a lady from New York, with some dozen ladies to assist her. There were present, the afternoon I visited it, one hundred and thirteen girls from six to twenty years of age, all plying the needle, some with pieces of patchwork, and others with aprons, pillow-cases, or handkerchiefs.

Though I have never been on the school-committee, I accepted invitations to address the schools on these visits, and particularly plied the pupils with questions, so as to catch the tone of their minds; and I have rarely heard children answer with more readiness and spirit. We had a dialogue substantially as follows: —

"Children, what are you going to do when you grow up?"

"Going to work, Sir."

"On what?"

"Cotton and corn, Sir."

"What are you going to do with the corn?"

"Eat it."

"What are you going to do with the cotton?"

"Sell it."

"What are you going to do with the money you get for it?"

One boy answered in advance of the rest, —

"Put it in my pocket, Sir."

"That won't do. What 's better than that?"

"Buy clothes, Sir."

"What else will you buy?"

"Shoes, Sir."

"What else are you going to do with your money?"

There was some hesitation at this point. Then the question was put, —

"What are you going to do Sundays?"

"Going to meeting."

"What are you going to do there?"

"Going to sing."

"What else?"

"Hear the parson."

"Who 's going to pay him?"

One boy said, — "Government pays him"; but the rest answered, —

"We 's pays him."

"Well, when you grow up, you 'll probably get married, as other people do, and you 'll have your little children; now, what will you do with them?"

There was a titter at this question; but the general response came, —

"Send 'em to school, Sir."

"Well, who 'll pay the teacher?"

"We 's pays him."

One who listens to such answers can hardly think that there is any natural incapacity in these children to acquire with maturity of years the ideas and habits of good citizens.

The children are cheerful, and, in most of the schools, well-behaved, except that it is not easy to keep them from whispering and talking. They are joyous, and you can see the boys after school playing the soldier, with corn-stalks for guns. The memory is very susceptible in them, — too much so, perhaps, as it is ahead of the reasoning faculty.

The labor of the season has interrupted attendance on the schools, the parents being desirous of having the children aid them in planting and cultivating their crops, and it not being thought best to allow the teaching to interfere in any way with industrious habits.

A few freedmen, who had picked up an imperfect knowledge of reading, have assisted our teachers, though a want of proper training materially detracts from their usefulness in this respect. Ned and Uncle Cyrus have already been mentioned. The latter, a man of earnest piety, has died since my visit. Anthony kept four schools on Hilton Head Island last summer and autumn, being paid at first by the superintendents, and afterwards by the negroes themselves; but in November he enlisted in the negro regiment. Hettie was another of these. She assisted Barnard at Edisto last spring, continued to teach after the Edisto people were brought to St. Helena village, and one day brought some of her pupils to the school at the Baptist Church, saying to the teachers there that she could carry them no farther. They could read their letters and words of one syllable. Hettie had belonged to a planter on Wadmelaw Island, a kind old gentleman, a native of Rhode Island, and about the only citizen of Charleston who, when Samuel Hoar went on his mission to South Carolina, stood up boldly for his official and personal protection. Hettie had been taught to read by his daughter; and let this be remembered to the honor of the young woman.

Such are the general features of the schools as they met my eye. The most advanced classes, and these are but little ahead of the rest, can read simple stories and the plainer passages of Scripture; and they could even pursue self-instruction, if the schools were to be suspended. The knowledge they have thus gained can never be extirpated. They could read with much profit a newspaper specially prepared for them and adapted to their condition. They are learning that the world is not bounded north

by Charleston, south by Savannah, west by Columbia, and east by the sea, with dim visions of New York on this planet or some other, — about their conception of geography when we found them. They are acquiring the knowledge of figures with which to do the business of life. They are singing the songs of freemen. Visit their schools; remember that a little more than a twelve-month ago they knew not a letter, and that for generations it has been a crime to teach their race; then contemplate what is now transpiring, and you have a scene which prophets and sages would have delighted to witness. It will be difficult to find equal progress in an equal period since the morning rays of Christian truth first lighted the hill-sides of Judea. I have never looked on St. Peter's, or beheld the glories of art which Michel Angelo has wrought or traced; but to my mind the spectacle of these poor souls struggling in darkness and bewilderment to catch the gleams of the upper and better light transcends in moral grandeur anything that has ever come from mortal hands.

Next as to *industry*. The laborers, during their first year under the new system, have acquired the idea of ownership, and of the security of wages, and have come to see that labor and slavery are not the same thing. The notion that they were to raise no more cotton has passed away, since work upon it is found to be remunerative, and connected with the proprietorship of land. House-servants, who were at first particularly set against it, now generally prefer it. The laborers have collected the pieces of the gins which they destroyed on the flight of their masters, the ginning being obnoxious work, repaired them, and ginned the cotton on the promise of wages. Except upon plantations in the vicinity of camps, where other labor is more immediately remunerative, and an unhealthy excitement prevails, there is a general disposition to cultivate it. The culture of the cotton is voluntary, the only penalty for not engaging in it being the imposition of a rent for the tenement and land adjacent thereto occupied by the negro, not exceeding two dollars per month. Both the Government and private individuals, who have become owners of one-fourth of the land by the recent tax-sales, pay twenty-five cents for a standard day's-work, which may, by beginning early, be performed by a healthy and active hand by noon; and the same was the case with the tasks under the slave-system on very many of the plantations. As I was riding through one of Mr. Philbrick's fields one morning, I counted fifty persons at work who belonged to one plantation. This gentleman, who went out with the first delegation, and at the same time gave largely to the benevolent contributions for the enterprise, was the leading purchaser at the tax-sales, and combining a fine humanity with honest sagacity and close calculation, no man is so well fitted to try the experiment. He bought thirteen plantations, and on these has had planted and cultivated eight hundred and sixteen acres of cotton where four hundred and ninety-nine and one twelve-hundredth acres were cultivated last year, — a larger increase, however, than will generally be found in other districts, due mainly to prompter payments. The general superintendent of Port Royal Island said to me, — "We have to restrain rather than to encourage the negroes to take land for cotton." The general superintendent of Hilton Head Island said, that on that island the negroes had, besides adequate corn, taken two, three, and in a few cases four acres of cotton to a hand, and there was a general disposition to cultivate it, except near the camps. A superintendent on St. Helena Island said, that, if he were going to carry on any work, he should not want better laborers. He had charge of the refugees from Edisto, who had been brought to St. Helena village, and who had cleared and fenced patches for gardens, felling the trees for that purpose.

The laborers do less work, perhaps, than a Yankee would think they might

do; but they do about as much as he himself would do, after a residence of a few years in the same climate, and when he had ceased to work under the influence of Northern habits. Northern men have sometimes been unjust to the South, when comparing the results of labor in the different sections. God never intended that a man should toil under a tropical sun with the same energy and constancy as in our bracing latitude. There has been less complaint this year than last of "a pain in the small of the back," or of "a fever in the head,"—in other words, less *shamming*. The work has been greatly deranged by the draft, some features of which have not been very skilfully arranged, and by the fitfulness with which the laborers have been treated by the military authorities. The work both upon the cotton and the corn is done only by the women, children, and disabled men. It has been suggested that field-work does not become women in the new condition; and so it may seem to some persons of just sympathies who have not yet learned that no honest work is dishonorable in man or woman. But this matter may be left to regulate itself. Field-work, as an occupation, may not be consistent with the finest feminine culture or the most complete womanliness; but it in no way conflicts with virtue, self-respect, and social development. Women work in the field in Switzerland, the freest country of Europe; and we may look with pride on the triumphs of this generation, when the American negroes become the peers of the Swiss peasantry. Better a woman with the hoe than without it, when she is not yet fitted for the needle or the book.

The negroes were also showing their capacity to organize labor and apply capital to it. Harry, to whom I referred in my second report, as "my faithful guide and attendant, who had done for me more service than any white man could render," with funds of his own, and some borrowed money, bought at the recent tax-sales a small farm of three hundred and thirteen acres for three hundred and five dollars. He was to plant sixteen and a half acres of cotton, twelve and a half of corn, and one and a half of potatoes. I rode through his farm on the 10th of April, my last day in the territory, and one-third of his crop was then in. Besides some servant's duty to an officer, for which he is well paid, he does the work of a full hand on his place. He hires one woman and two men, one of the latter being old and only a three-quarters hand. He has two daughters, sixteen and seventeen years of age, one of whom is likewise only a three-quarters hand. His wife works also, of whom he said, "She 's the best hand I got"; and if Celia is only as smart with her hoe as I know her to be with her tongue, Harry's estimate must be right. He has a horse twenty-five years old and blind in both eyes, whom he guides with a rope,—carrying on farming, I thought, somewhat under difficulties. Harry lives in the house of the former overseer, and delights, though not boastingly, in his position as a landed proprietor. He has promised to write me, or rather dictate a letter, giving an account of the progress of his crop. He has had much charge of Government property, and when Captain Hooper, of General Saxton's staff, was coming North last autumn, Harry proposed to accompany him; but at last, of his own accord, gave up the project, saying, "It 'll not do for all two to leave together."

Another case of capacity for organization should be noted. The Government is building twenty-one houses for the Edisto people, eighteen feet by fourteen, with two rooms, each provided with a swinging board-window, and the roof projecting a little as a protection from rain. The journeymen-carpenters are seventeen colored men, who have fifty cents per day without rations, working ten hours. They are under the direction of Frank Barnwell, a freedman, who receives twenty dollars a month. Rarely have I talked with a more intelligent contractor. It was my great regret that I had not time to visit the village of

improved houses near the Hilton Head camp, which General Mitchell had extemporized, and to which he gave so much of the noble enthusiasm of his last days.

Next as to the *development of manhood.* This has been shown, in the first place, in the prevalent disposition to acquire land. It did not appear upon our first introduction to these people, and they did not seem to understand us when we used to tell them that we wanted them to own land. But it is now an active desire. At the recent tax-sales, six out of forty-seven plantations sold were bought by them, comprising two thousand five hundred and ninety-five acres, sold for twenty-one hundred and forty-five dollars. In other cases the negroes had authorized the superintendent to bid for them, but the land was reserved by the United States. One of the purchases was that made by Harry, noted above. The other five were made by the negroes on the plantations combining the funds they had saved from the sale of their pigs, chickens, and eggs, and from the payments made to them for work, — they then dividing off the tract peaceably among themselves. On one of these, where Kit, before mentioned, is the leading spirit, there are twenty-three field-hands, who are equivalent to eighteen full hands. They have planted and are cultivating sixty-three acres of cotton, fifty of corn, six of potatoes, with as many more to be planted, four and a half of cow-peas, three of pea-nuts, and one and a half of rice. These facts are most significant. The instinct for land — to have one spot on earth where a man may stand, and whence no human being can of right drive him — is one of the most conservative elements of our nature; and a people who have it in any fair degree will never be nomads or vagabonds.

This developing manhood is further seen in their growing consciousness of rights, and their readiness to defend themselves, even when assailed by white men. The former slaves of a planter, now at Beaufort, who was a resident of New York when the war broke out, have generally left the plantation, suspicious of his presence, saying that they will not be his bondmen, and fearing that in some way he may hold them, if they remain on it. A remarkable case of the assertion of rights occurred one day during my visit. Two white soldiers, with a corporal, went on Sunday to Coosaw Island, where one of the soldiers, having a gun, shot a chicken belonging to a negro. The negroes rushed out and wrested the gun from the corporal, to whom the soldier had handed it, thinking that the negroes would not take it from an officer. They then carried it to the superintendent, who took it to head-quarters, where an order was given for the arrest of the trespasser. Other instances might be added, but these are sufficient.

Another evidence of developing manhood appears in their desire for the comforts and conveniences of household life. The Philadelphia society, for the purpose of maintaining reasonable prices, has a store on St. Helena Island, which is under the charge of Friend Hunn, of the good fellowship of William Penn. He was once fined in Delaware three thousand dollars for harboring and assisting fugitive slaves; but he now harbors and assists them at a much cheaper rate. Though belonging to a society which is the advocate of peace, his tone is quite as warlike as that of the world's people. In this store alone — and there are others on the island, carried on by private enterprise — two thousand dollars' worth of goods are sold monthly. To be sure, a rather large proportion of these consists of molasses and sugar, "sweetening," as the negroes call it, being in great demand, and four barrels of molasses having been sold the day of my visit. But there is also a great demand for plates, knives, forks, tin ware, and better clothing, including even hoop-skirts. Negro-cloth, as it is called, osnaburgs, russet-colored shoes, — in short, the distinctive apparel formerly dealt out to them, as a uniform allowance, — are very generally rejected. But there is no article of household-furniture or wearing apparel, used

by persons of moderate means among us, which they will not purchase, when they are allowed the opportunity of labor and earning wages. What a market the South would open under the new system! It would set all the mills and workshops astir. Four millions of people would become purchasers of all the various articles of manufacture and commerce, in place of the few coarse, simple necessaries, laid in for them in gross by the planters. Here is the solution of the vexed industrial question. The indisposition to labor is overcome in a healthy nature by instincts and motives of superior force, such as the love of life, the desire to be well clothed and fed, the sense of security derived from provision for the future, the feeling of self-respect, the love of family and children, and the convictions of duty. These all exist in the negro, in a state of greater or less development. To give one or two examples. One man brought Captain Hooper seventy dollars in silver, to keep for him, which he had obtained from selling pigs and chickens, — thus providing for the future. Soldiers of Colonel Higginson's regiment, having confidence in the same officer, intrusted him, when they were paid off, with seven hundred dollars, to be transmitted by him to their wives, and this besides what they had sent home in other ways,—showing the family-feeling to be active and strong in them. They have also the social and religious inspirations to labor. Thus, early in our occupation of Hilton Head, they took up, of their own accord, a collection to pay for the candles for their evening meetings, feeling that it was not right for the Government longer to provide them. The result was a contribution of two dollars and forty-eight cents. They had just fled from their masters, and had received only a small pittance of wages, and this little sum was not unlike the two mites which the widow cast into the treasury. Another collection was taken, last June, in the church on St. Helena Island, upon the suggestion of the pastor that they should share in the expenses of worship. Fifty-two dollars was the result, — not a bad collection for some of our Northern churches. I have seen these people where they are said to be lowest, and sad indeed are some features of their lot, yet with all earnestness and confidence I enter my protest against the wicked satire of Carlyle.

Is there not here some solution of the question of prejudice or caste which has troubled so many good minds? When these people can no longer be used as slaves, men will try to see how they can make the most out of them as freemen. Your Irishman, who now works as a day-laborer, honestly thinks that he hates the negro; but when the war is over, he will have no objection to going South and selling him groceries and household-implements at fifty per cent. advance on New-York prices, or to hiring him to raise cotton for twenty-five or fifty cents a day. Our prejudices, under any reasonable adjustment of the social system, readily accommodate themselves to our interests, even without much aid from the moral sentiments.

Let those who would study well this social question, or who in public trusts are charged with its solution, be most careful here. Every motive in the minds of these people, whether of instinct, desire, or duty, must be addressed. All the elements of human nature must be appealed to, physical, moral, intellectual, social, and religious. Imperfect indeed is any system which, like that at New Orleans, offers wages, but does not welcome the teacher. It is of little moment whether three dollars or thirty per month be paid the laborer, so long as there is no school to bind both parent and child to civil society with new hopes and duties.

There are some vices charged upon these people, or a portion of them, and truth requires that nothing be withheld. There is said to be a good deal of petty pilfering among them, although they are faithful to trusts. This is the natural growth of the old system, and is quite

likely to accompany the transition-state. Besides, the present disturbed and unorganized condition of things is not favorable to the rigid virtues. But inferences from this must not be pressed too far. When I was a private soldier in Virginia, as one of a three-months' regiment, we used to hide from each other our little comforts and delicacies, even our dishes and clothing, or they were sure to disappear. But we should have ridiculed an adventurous thinker upon the characteristics of races and classes, who should have leaped therefrom to the conclusion that all white men or all soldiers are thieves. And what inferences might not one draw, discreditable to all traders and manufacturers, from the universal adulteration of articles of food! These people, it is said, are disposed to falsehood in order to get rations and small benefits, — a natural vice which comes with slavery, and too often attends on poverty without slavery. Those of most demonstrative piety are rarely better than the rest, not, indeed, hypocritical, but satisfying their consciences by self-depreciation and indulgence in emotion, —psychological manifestations which one may find in more advanced communities. They show no special gratitude to us for liberating them from bonds. Nor do they ordinarily display much exhilaration over their new condition, — being quite unlike the Italian revolutionist who used to put on his toga, walk in the forum, and personate Brutus and Cassius. Their appreciation of their better lot is chiefly seen in their dread of a return of their masters, in their excitement when an attack is feared, in their anxious questionings while the assault on Charleston was going on, and in their desire to get their friends and relatives away from the Rebels, — an appreciation of freedom, if not ostentatious, at least sensible.

But away with such frivolous modes of dealing with the rights of races to self-development! Because Englishmen may be classified as hard and conceited, Frenchmen as capricious, Austrians as dull, and the people of one other nation are sometimes thought to be vainglorious, shall these therefore be slaves? And where is that model race which shall sway them all? A people may have grave defects, but it may not therefore be rightfully disabled.

During my recent visit, I had an opportunity, on three different occasions, to note carefully Colonel T. W. Higginson's colored regiment, known as the First Regiment of South-Carolina Volunteers. Major-General Hunter's first regiment was mainly made up of conscripts, drafted May 12th, 1862, and disbanded August 11th, three months afterwards, there being no funds wherewith to pay them, and the discharged men going home to find the cotton and corn they had planted overgrown with weeds. On the 10th of October, General Saxton, being provided with competent authority to raise five thousand colored troops, began to recruit a regiment. His authority from the War Department bore date August 25th, and the order conferring it states the object to be "to guard the plantations, and protect the inhabitants from captivity and murder." This was the first clear authority ever given by the Government to raise a negro regiment in this war. There were, indeed, some ambiguous words in the instructions of Secretary Cameron to General Sherman, when the original expedition went to Port Royal, authorizing him to organize the negroes into companies and squads for such services as they might be fitted for, but this not to mean a general arming for military service. Secretary Stanton, though furnishing muskets and red trousers to General Hunter's regiment, did not think the authority sufficient to justify the payment of the regiment. The first regiment, as raised by General Saxton, numbered four hundred and ninety-nine men when Colonel Higginson took command of it on the 1st of December; and on the 19th of January, 1863, it had increased to eight hundred and forty-nine. It has made three expeditions to Florida and Georgia, — one before Colonel Higginson as-

sumed the command, described in Mrs. Stowe's letter to the women of England, and two under Colonel Higginson, one of which was made in January up the St. Mary's, and the other in March to Jacksonville, which it occupied for a few days until an evacuation was ordered from head-quarters. The men are volunteers, having been led to enlist by duty to their race, to their kindred still in bonds, and to us, their allies. Their drill is good, and their time excellent. They have borne themselves well in their expeditions, quite equalling the white regiments in skirmishing. In *morale* they seemed very much like white men, and with about the same proportion of good and indifferent soldiers. Some I saw of the finest metal, like Robert Sutton, whom Higginson describes in his report as "the real conductor of the whole expedition at the St. Mary's," and Sergeant Hodges, a master-carpenter, capable of directing the labors of numerous journeymen. Another said, addressing a meeting at Beaufort, that he had been restless, nights, thinking of the war and of his people, — that, when he heard of the regiment being formed, he felt that his time to act had come, and that it was his duty to enlist, — that he did not fight for his rations and pay, but for wife, children, and people.

These men, as already intimated, are very much like other men, easily depressed, and as easily reanimated by words of encouragement. Many have been reluctant to engage in military service, — their imagination investing it with the terrors of instant and certain death. But this reluctance has passed away with participation in active service, with the adventure and inspiration of a soldier's life, and the latent manhood has recovered its rightful sway. Said a superintendent who was of the first delegation to Port Royal in March, 1862, — a truthful man, and not given to rose-colored views, — "I did not have faith in arming negroes, when I visited the North last autumn, but I have now. They will be not mere machines, but real tigers, when aroused; and I should not wish to face them." One amusing incident may be mentioned. A man deserted from the regiment, was discovered hidden in a chimney in the district where he had lived, was taken back to camp, went to Florida in Higginson's first expedition, bore his part well in the skirmishes, became excited with the service, was made a sergeant, and, receiving a furlough on his return, went to the plantation where he had hid, and said he would not take five thousand dollars for his place.

But more significant, as showing the success of the experiment, is the change of feeling among the white soldiers towards the negro regiment, a change due in part to the just policy of General Saxton, in part to the President's Proclamation of January 1st, which has done much to clear the atmosphere everywhere within the army-lines, but more than all to the soldierly conduct of the negroes themselves during their expeditions. I had one excellent opportunity to note this change. On the 6th of April, Colonel Higginson's regiment was assigned to picket-duty on Port Royal Island, — the first active duty it had performed on the Sea Islands, — and was to relieve the Pennsylvania Fifty-Fifth. When, after a march of ten miles, it reached the advanced picket-station, there were about two hundred soldiers of the Pennsylvania Fifty-Fifth awaiting orders to proceed to Beaufort. I said, in a careless tone, to one of the Pennsylvania soldiers, who was looking at Higginson's regiment as it stood in line, —

"Is n't this rather new, to be relieved by a negro regiment?"

"All right," said he. "They 've as much right to fight for themselves as I have to fight for them."

A squad of half a dozen men stood by, making no dissent, and accepting him as their spokesman. Moving in another direction, I said to a soldier, —

"What do you think of that regiment?"

The answer was, —

"All right. I 'd rather they 'd shoot

the Rebels than have the Rebels shoot me"; and none of the by-standers dissented.

As one of the negro companies marched off the field to picket a station at the Ferry, they passed within a few feet of some twenty of the Pennsylvania soldiers, just formed into line preparatory to marching to Beaufort. The countenances of the latter, which I watched, exhibited no expression of disgust, dislike, or disapprobation, only of curiosity. Other white soldiers gave to the weary negroes the hominy left from the morning meal. The Major of the Fifty-Fifth, highest in command of the relieved regiment, explained very courteously to Colonel Higginson the stations and duties of the pickets, and proffered any further aid desired. This was, it is true, an official duty, but there are more ways than one in which to perform even an official duty. I rode back to Beaufort, part of the way, in company with a captain of the First Massachusetts Cavalry, who was the officer of the day. He said "he was n't much of a negro-man, but he had no objection to their doing our fighting." He pronounced the word as spelled with two *gs*; but I prefer to retain the good English. Colonel Montgomery, who had a partly filled regiment, most of whom were conscripts, said that on his return from Jacksonville he sent a squad of his men ashore in charge of some prisoners he had taken. Some white soldiers seeing them approach from the wharf, one said, —

"What are those coming?"

"Negro soldiers," (word pronounced as in the former case,) was the answer.

"Damn 'em!" was the ejaculation.

But as they approached nearer, "What have they got with 'em?" was inquired.

"Why, some Secesh prisoners."

"Bully for the negroes!" (the same pronunciation as before,) was then the response from all.

So quick was the transition, when it was found that the negroes had demonstrated their usefulness! It is, perhaps, humiliating to remember that such an unreasonable and unpatriotic prejudice has at any time existed; but it is never worth while to suppress the truth of history. This prejudice has been effectually broken in the Free States; and one of the pageants of this epoch was the triumphal march through Boston, on the 28th of May, on its way to embark for Port Royal, of the Fifty-Fourth Regiment of Massachusetts Volunteers, the first regiment of negro soldiers which the Free States have sent to the war. On the day previous, May 27th, a far different scene transpired on the banks of the Mississippi. Two black regiments, enlisted some months before in Louisiana under the order of Major-General Butler, both with line and one with field officers of their own lineage, made charge after charge on the batteries of Port Hudson, and were mown down like summer's grass, the survivors, many with mutilated limbs, closing up the thinned ranks and pressing on again, careless of life, and mindful only of honor and duty, with a sublimity of courage unsurpassed in the annals of war, and leaving there to all mankind an immortal record for themselves and their race.

I cannot here forbear a momentary tribute to Wentworth Higginson. Devoting himself heroically to his great work, absorbed in its duties, and bearing his oppressive responsibility as the leader of a regiment in which to a great extent are now involved the fortunes of a race, he adds another honorable name to the true chivalry of our time.

Homeward-bound, I stopped for two days at Fortress Monroe, and was again among the familiar scenes of my soldier-life. It was there that Major-General Butler, first of all the generals in the army of the Republic, and anticipating even Republican statesmen, had clearly pointed to the cause of the war. At Craney Island I met two accomplished women of the Society of Friends, who, on a most cheerless spot, and with every inconvenience, were teaching the children of the freedmen. Two good men,

one at the fort and the other at Norfolk, were distributing the laborers on farms in the vicinity, and providing them with implements and seeds which the benevolent societies had furnished. Visiting Hampton, I recognized, in the shanties built upon the charred ruins, the familiar faces of those who, in the early days of the war, had been for a brief period under my charge. Their hearty greetings to one whom they remembered as the first to point them to freedom and cheer them with its prospect could hardly be received without emotion. But there is no time to linger over these scenes.

Such are some of the leading features in the condition of the freedmen, particularly at Port Royal. The enterprise for their aid, begun in doubt, is no longer a bare hope or possibility. It is a fruition and a consummation. The negroes will work for a living. They will fight for their freedom. They are adapted to civil society. As a people, they are not exempt from the frailties of our common humanity, nor from the vices which hereditary bondage always superadds to these. As it is said to take three generations to subdue a freeman completely to a slave, so it may not be possible in a single generation to restore the pristine manhood. One who expects to find in emancipated slaves perfect men and women, or to realize in them some fair dream of an ideal race, will meet disappointment; but there is nothing in their nature or condition to daunt the Christian patriot; rather, there is everything to cheer and fortify his faith. They have shown capacity for knowledge, for free industry, for subordination to law and discipline, for soldierly fortitude, for social and family relations, for religious culture and aspirations; and these qualities, when stirred and sustained by the incitements and rewards of a just society, and combining with the currents of our continental civilization, will, under the guidance of a benevolent Providence which forgets neither them nor us, make them a constantly progressive race, and secure them ever after from the calamity of another enslavement, and ourselves from the worse calamity of being again their oppressors.

NO AND YES.

I WATCHED her at her spinning;
And this was my beginning
Of wooing and of winning.

But when a maid opposes,
And throws away your roses,
You say the case forecloses.

Yet sorry wit one uses,
Who loves and thinks he loses
Because a maid refuses.

For by her once denying
She only means complying
Upon a second trying.

When first I said, in pleading,
"Behold, my love lies bleeding!"
She heard me half unheeding.

When afterward I told her,
And blamed her growing colder, —
She dropped upon my shoulder.

Had I a doubt? That quelled it:
Her very look dispelled it.
I caught her hand, and held it.

Along the lane I led her,
And while her cheeks grew redder,
I sued outright to wed her.

Good end from bad beginning!
My wooing came to winning, —
And still I watch her spinning.

THE MATHER SAFE.

I.

The service I was able to render an official personage connected with —— College in New England procured me access to the library belonging to that institution. In common with many of my fellow-citizens, I had previously enjoyed the pleasure of responding to circulars petitioning for money to buy books for interment in this choice literary catacomb; nay, I was even allowed the satisfaction of an annual stare at them through an iron grating, and of reading a placard to the effect that nobody was allowed to enter an alcove or take down a volume. As it occurred to me that the generous donors could not object to add one more to the select half-dozen or so, who, by having the privilege of the shelves, could really use the library, I demanded this favor of the gentleman who desired to recompense me for what I had done for him. The Librarian, who valued books as things capable of being locked up in cells like criminals, there to figure numerically to the confusion of rival institutions, was manifestly disturbed when I presented my credentials. The authority, however, was not to be questioned; — I was to be admitted to the library at any hour of the day; and I took care to drop a civil expression to imply my estimation of the privilege and my purpose of enjoying it.

Wanting the leisure to attempt that ponderous undertaking known as "a course of reading," it became my habit to browse about the building upon Saturday afternoons, and finally to establish myself, with whatever authors I had selected, in a certain retired alcove devoted to the metaphysicians. This comfortable nook opens just behind Crawford's bust of the late President T——, and is nearly opposite the famous Mather Safe. As it is possible that I am addressing some who are not graduates of —— College, nor familiar with its library, it may be well to say a word of the history of the spacious

Atlantic Monthly

significant shoulder-shrugs and eyebrow-elevations, because it was "not exactly the thing to get out, you know"; but if it was n't to get out, why did he let it out? and so from my dark corner I watched him as a cat does a mouse, and the lamp-light shone full upon him, and I understood every word and shrug, and I am going to tell it all to the world. I translated that the holy father had been "skylarking" in a boat, and in gay society had forgotten his vows of frugality and abstinence and general mortification of the flesh, and had become, not very drunk, but drunk enough to be dangerous, when he came ashore and took a horse in his hands, and so upset his carriage, and gashed his temporal artery, and came to grief, which is such a casualty as does not happen every day, and I don't blame people for making the most of it. Then the moral was pointed, and the tale adorned, and the impression deepened, solemnized, and struck home by the fact that the very horse concerned in the "casualty" was to be fastened behind our coach, and the whole population came out with lanterns and umbrellas to tie him on, — all but one man, who was deaf, and stood on the piazza, anxious and eager to know everything that had been and was still occurring, and yet sorry to give trouble, and so compromising the matter and making it worse, as compromises generally do, by questioning everybody with a deprecating, fawning air.

Item. We shall all, if we live long enough, be deaf, but we need not be meek about it. I for one am determined to walk up to people and demand what they are saying at the point of the bayonet. Deafness, if it must be so, but independence at any rate.

And when the fulness of time is come, we alight at Fort-William-Henry Hotel, and all night long through the sentient woods I hear the booming of Johnson's cannon, the rattle of Dieskau's guns, and that wild war-whoop, more terrible than all. Again old Monro watches from his fortress-walls the steadily approaching foe, and looks in vain for help, save to his own brave heart. I see the light of conquest shining in his foeman's eye, darkened by no shadow of the fate that waits his coming on a bleak Northern hill; but, generous in the hour of victory, he shall not be less noble in defeat, — for to generous hearts all generous hearts are friendly, whether they stand face to face or side by side.

Over the woods and the waves, when the morning breaks, like a bridegroom coming forth from his chamber, rejoicing as a strong man to run a race, comes up the sun in his might and crowns himself king. All the summer day, from morn to dewy eve, we sail over the lakes of Paradise. Blue waters and blue sky, soft clouds, and green islands, and fair, fruitful shores, sharp-pointed hills, long, gentle slopes and swells, and the lights and shadows of far-stretching woods; and over all the potence of the unseen past, the grand, historic past, — soft over all the invisible mantle which our fathers flung at their departing, — the mystic effluence of the spirits that trod these wilds and sailed these waters, — the courage and the fortitude, the hope that battled against hope, the comprehensive outlook, the sagacious purpose, the resolute will, the unhesitating self-sacrifice, the undaunted devotion which has made this heroic ground: cast these into your own glowing crucible, O gracious friend, and crystallize for yourself such a gem of days as shall worthily be set forever in your crown of the beatitudes.

THE FLEUR-DE-LIS AT PORT ROYAL.

In the year 1562 a cloud of black and deadly portent was thickening over France. Surely and swiftly she glided towards the abyss of the religious wars. None could pierce the future; perhaps none dared to contemplate it: the wild rage of fanaticism and hate, friend grappling with friend, brother with brother, father with son; altars profaned, hearthstones made desolate; the robes of Justice herself bedrenched with murder. In the gloom without lay Spain, imminent and terrible. As on the hill by the field of Dreux, her veteran bands of pikemen, dark masses of organized ferocity, stood biding their time while the battle surged below, then swept downward to the slaughter, — so did Spain watch and wait to trample and crush the hope of humanity.

In these days of fear, a Huguenot colony sailed for the New World. The calm, stern man who represented and led the Protestantism of France felt to his inmost heart the peril of the time. He would fain build up a city of refuge for the persecuted sect. Yet Gaspar de Coligny, too high in power and rank to be openly assailed, was forced to act with caution. He must act, too, in the name of the Crown, and in virtue of his office of Admiral of France. A nobleman and a soldier, — for the Admiral of France was no seaman, — he shared the ideas and habits of his class; nor is there reason to believe him to have been in advance of others of his time in a knowledge of the principles of successful colonization. His scheme promised a military colony, not a free commonwealth. The Huguenot party was already a political, as well as a religious party. At its foundation lay the religious element, represented by Geneva, the martyrs, and the devoted fugitives who sang the psalms of Marot among rocks and caverns. Joined to these were numbers on whom the faith sat lightly, whose hope was in commotion and change. Of these, in great part, was the Huguenot noblesse, from Condé, who aspired to the crown, —

> "Ce petit homme tant joli,
> Qui toujours chante, toujours rit," —

to the younger son of the impoverished seigneur whose patrimony was his sword. More than this, the restless, the factious, the discontented began to link their fortunes to a party whose triumph would involve confiscation of the bloated wealth of the only rich class in France. An element of the great revolution was already mingling in the strife of religions.

America was still a land of wonder. The ancient spell still hung unbroken over the wild, vast world of mystery beyond the sea. A land of romance, of adventure, of gold.

Fifty-eight years later, the Puritans landed on the sands of Massachusetts Bay. The illusion was gone, — the *ignis-fatuus* of adventure, the dream of wealth. The rugged wilderness offered only a stern and hard-won independence. In their own hearts, not in the promptings of a great leader or the patronage of an equivocal government, their enterprise found its birth and its achievement. They were of the boldest, the most earnest of their sect. There were such among the French disciples of Calvin; but no Mayflower ever sailed from a port of France. Coligny's colonists were of a different stamp, and widely different was their fate.

An excellent seaman and stanch Protestant, John Ribaut of Dieppe, commanded the expedition. Under him, besides sailors, were a band of veteran soldiers, and a few young nobles. Embarked in two of those antiquated craft whose high poops and tub-like proportions are preserved in the old engravings of De Bry, they sailed from Havre on the eighteenth of February, 1562. They crossed the Atlantic, and on the thirtieth of April, in the latitude of twenty-nine

and a half degrees, saw the long, low line where the wilderness of waves met the wilderness of woods. It was the coast of Florida. Soon they descried a jutting point, which they called French Cape, perhaps one of the headlands of Matanzas Inlet. They turned their prows northward, skirting the fringes of that waste of verdure which rolled in shadowy undulation far to the unknown West.

On the next morning, the first of May, they found themselves off the mouth of a great river. Riding at anchor on a sunny sea, they lowered their boats, crossed the bar that obstructed the entrance, and floated on a basin of deep and sheltered water, alive with leaping fish. Indians were running along the beach and out upon the sand-bars, beckoning them to land. They pushed their boats ashore and disembarked, — sailors, soldiers, and eager young nobles. Corslet and morion, arquebuse and halberd flashed in the sun that flickered through innumerable leaves, as, kneeling on the ground, they gave thanks to God who had guided their voyage to an issue full of promise. The Indians, seated gravely under the neighboring trees, looked on in silent respect, thinking that they worshipped the sun. They were in full paint, in honor of the occasion, and in a most friendly mood. With their squaws and children, they presently drew near, and, strewing the earth with laurel-boughs, sat down among the Frenchmen. The latter were much pleased with them, and Ribaut gave the chief, whom he calls the king, a robe of blue cloth, worked in yellow with the regal fleur-de-lis.

But Ribaut and his followers, just escaped from the dull prison of their ships, were intent on admiring the wild scenes around them. Never had they known a fairer May-Day. The quaint old narrative is exuberant with delight. The quiet air, the warm sun, woods fresh with young verdure, meadows bright with flowers; the palm, the cypress, the pine, the magnolia; the grazing deer; herons, curlews, bitterns, woodcock, and unknown water-fowl that waded in the ripple of the beach; cedars bearded from crown to root with long gray moss; huge oaks smothering in the serpent folds of enormous grape-vines: such were the objects that greeted them in their roamings, till their new-found land seemed "the fairest, fruitfullest, and pleasantest of al the world."

They found a tree covered with caterpillars, and hereupon the ancient black-letter says, — "Also there be Silke wormes in meruielous number, a great deale fairer and better then be our silk wormes. To bee short, it is a thing vnspeakable to consider the thinges that bee seene there, and shalbe founde more and more in this incomperable lande."

Above all, it was plain to their excited fancy that the country was rich in gold and silver, turquoises and pearls. One of the latter, "as great as an Acorne at ye least," hung from the neck of an Indian who stood near their boats as they reëmbarked. They gathered, too, from the signs of their savage visitors, that the wonderful land of Cibola, with its seven cities and its untold riches, was distant but twenty days' journey by water. In truth, it was on the Gila, two thousand miles off, and its wealth a fable.

They named the river the River of May, — it is now the St. John's, — and on its southern shore, near its mouth, planted a stone pillar graven with the arms of France. Then, once more embarked, they held their course northward, happy in that benign decree which locks from mortal eyes the secrets of the future.

Next they anchored near Fernandina, and to a neighboring river, probably the St. Mary's, gave the name of the Seine. Here, as morning broke on the fresh, moist meadows hung with mists, and on broad reaches of inland waters which seemed like lakes, they were tempted to land again, and soon "espied an innumerable number of footesteps of great Hartes and Hindes of a wonderfull greatnesse, the steppes being all fresh and

new, and it seemeth that the people doe nourish them like tame Cattell." By two or three weeks of exploration they seem to have gained a clear idea of this rich semi-aquatic region. Ribaut describes it as "a countrie full of hauens riuers and Ilands of such fruitfulnes, as cannot with tongue be expressed." Slowly moving northward, they named each river, or inlet supposed to be a river, after the streams of France, — the Loire, the Charente, the Garonne, the Gironde. At length, they reached a scene made glorious in after-years. Opening betwixt flat and sandy shores, they saw a commodious haven, and named it Port Royal.

On the twenty-seventh of May they crossed the bar, where the war-ships of Dupont crossed three hundred years later.* They passed Hilton Head, where Rebel batteries belched their vain thunder, and, dreaming nothing of what the rolling centuries should bring forth, held their course along the peaceful bosom of Broad River. On the left they saw a stream which they named Libourne, probably Skull Creek; on the right, a wide river, probably the Beaufort. When they landed, all was solitude. The frightened Indians had fled, but they lured them back with knives, beads, and looking-glasses, and enticed two of them on board their ships. Here, by feeding, clothing, and caressing them, they tried to wean them from their fears, but the captive warriors moaned and lamented day and night, till Ribaut, with the prudence and humanity which seem always to have characterized him, gave over his purpose of carrying them to France, and set them ashore again.

Ranging the woods, they found them full of game, wild turkeys and partridges, bears and lynxes. Two deer, of unusual size, leaped up from the underbrush. Crossbow and arquebuse were brought to the level; but the Huguenot captain, "moved with the singular fairness and bigness of them," forbade his men to shoot.

Preliminary exploration, not immediate settlement, had been the object of the voyage, but all was still rose-color in the eyes of the voyagers, and many of their number would fain linger in the New Canaan. Ribaut was more than willing to humor them. He mustered his company on deck, and made them a stirring harangue: appealed to their courage and their patriotism, told them how, from a mean origin, men rise by enterprise and daring to fame and fortune, and demanded who among them would stay behind and hold Port Royal for the king. The greater part came forward, and "with such a good will and joly corage," writes the commander, "as we had much to do to stay their importunitie." Thirty were chosen, and Albert de Pierria was named to command them.

A fort was forthwith begun, on a small stream called the Chenonceau, probably Archer's Creek, about six miles from the site of Beaufort. They named it Charlesfort, in honor of the unhappy son of Catherine de Médicis, Charles IX., the future hero of St. Bartholomew. Ammunition and stores were sent on shore, and, on the eleventh of June, with his diminished company, Ribaut, again embarking, spread his sails for France.

From the beach at Hilton Head Al-

* The following is the record of this early visit to Port Royal, taken from Ribaut's report to Coligny, translated and printed in London in 1563: —

"And when wee had sounded the entrie of the Chanell (thanked be God), wee entered safely therein with our shippes, against the opinion of many, finding the same one of the fayrest and greatest Hauens of the worlde. Howe be it, it must be remembred, least men approaching neare it within seven leagues of the lande, bee abashed and afraide on the East side, drawing towarde the Southeast, the grounde to be flatte, for neuerthelesse at a full sea, there is euery where foure fadome water keeping the right Chanel."

Ribaut thinks that the Broad River of Port Royal is the *Jordan* of the Spanish navigator Vasquez de Ayllon, who was here in 1520, and gave the name of St. Helena to a neighboring cape (*La Vega*, *Florida del Inca*). The adjacent district, now called St. Helena, is the Chicora of the old Spanish maps.

bert and his companions might watch the receding ships, growing less and less on the vast expanse of blue, dwindling to faint specks, then vanishing on the pale verge of the waters. They were alone in those fearful solitudes. From the North Pole to Mexico no Christian denizen but they.

But how were they to subsist? Their thought was not of subsistence, but of gold. Of the thirty, the greater number were soldiers and sailors, with a few gentlemen, that is to say, men of the sword, born within the pale of nobility, who at home could neither labor nor trade without derogation from their rank. For a time they busied themselves with finishing their fort, and, this done, set forth in quest of adventures.

The Indians had lost all fear of them. Ribaut had enjoined upon them to use all kindness and gentleness in their dealing with the men of the woods; and they more than obeyed him. They were soon hand and glove with chiefs, warriors, and squaws; and as with Indians the adage that familiarity breeds contempt holds with peculiar force, they quickly divested themselves of the prestige which had attached at the outset to their supposed character of children of the sun. Good-will, however, remained, and this the colonists abused to the utmost.

Roaming by river, swamp, and forest, they visited in turn the villages of five petty chiefs, whom they called kings, feasted everywhere on hominy, beans, and game, and loaded with gifts. One of these chiefs, named Audusta, invited them to the grand religious festival of his tribe. Thither, accordingly, they went. The village was alive with preparation, and troops of women were busied in sweeping the great circular area, surrounded by the lodges, where the ceremonies were to take place. But as the noisy and impertinent guests showed disposition to undue merriment, the chief shut them all in his wigwam, lest their gentile eyes should profane the mysteries. Here, immured in darkness, they listened to the howls, yelpings, and lugubrious songs that resounded from without. One of them, however, by some artifice, contrived to escape, hid behind a bush, and saw the whole solemnity: the procession of the medicine-men and the bedaubed and befeathered warriors; the drumming, the dancing, the stamping; the wild lamentation of the women, as they gashed the arms of the young girls with sharp mussel-shells and flung the blood into the air with dismal outcries. A scene of ravenous feasting followed, in which the French, released from durance, were summoned to share.

Their carousal over, they returned to Charlesfort, where they were soon pinched with hunger. The Indians, never niggardly of food, brought them supplies as long as their own lasted; but the harvest was not yet ripe, and their means did not match their good-will. They told the French of two other kings, Ouadé and Couexis, who dwelt towards the South, and were rich beyond belief in maize, beans, and squashes. Embarking without delay, the mendicant colonists steered for the wigwams of these potentates, not by the open sea, but by a perplexing inland navigation, including, as it seems, Calibogue Sound and neighboring waters. Arrived at the friendly villages, on or near the Savannah, they were feasted to repletion, and their boat laden with vegetables and corn. They returned rejoicing; but their joy was short. Their storehouse at Charlesfort, taking fire in the night, burned to the ground, and with it their newly acquired stock. Once more they set forth for the realms of King Ouadé, and once more returned laden with supplies. Nay, more, the generous savage assured them, that, so long as his cornfields yielded their harvests, his friends should not want.

How long this friendship would have lasted may well be matter of doubt. With the perception that the dependants on their bounty were no demigods, but a crew of idle and helpless beggars, respect would soon have changed to contempt and contempt to ill-will. But it was not to Indian war-clubs that the embryo col-

ony was to owe its ruin. Within itself it carried its own destruction. The ill-assorted band of landsmen and sailors, surrounded by that influence of the wilderness which wakens the dormant savage in the breasts of men, soon fell into quarrels. Albert, a rude soldier, with a thousand leagues of ocean betwixt him and responsibility, grew harsh, domineering, and violent beyond endurance. None could question or oppose him without peril of death. He hanged a drummer who had fallen under his displeasure, and banished La Chère, a soldier, to a solitary island, three leagues from the fort, where he left him to starve. For a time his comrades chafed in smothered fury. The crisis came at length. A few of the fiercer spirits leagued together, assailed their tyrant, and murdered him. The deed done, and the famished soldier delivered, they called to the command one Nicholas Barré, a man of merit. Barré took the command, and thenceforth there was peace.

Peace, such as it was, with famine, homesickness, disgust. The rough ramparts and rude buildings of Charlesfort, hatefully familiar to their weary eyes, the sweltering forest, the glassy river, the eternal silence of the wild monotony around them, oppressed the senses and the spirits. Did they feel themselves the pioneers of religious freedom, the advance-guard of civilization? Not at all. They dreamed of ease, of home, of pleasures across the sea,—of the evening cup on the bench before the cabaret, of dances with kind damsels of Dieppe. But how to escape? A continent was their solitary prison, and the pitiless Atlantic closed the egress. Not one of them knew how to build a ship; but Ribaut had left them a forge, with tools and iron, and strong desire supplied the place of skill. Trees were hewn down and the work begun. Had they put forth, to maintain themselves at Port Royal, the energy and resource which they exerted to escape from it, they might have laid the corner-stone of a solid colony.

All, gentle and simple, labored with equal zeal. They calked the seams with the long moss which hung in profusion from the neighboring trees; the pines supplied them with pitch; the Indians made for them a kind of cordage; and for sails they sewed together their shirts and bedding. At length a brigantine worthy of Robinson Crusoe floated on the waters of the Chenonceau. They laid in what provision they might, gave all that remained of their goods to the delighted Indians, embarked, descended the river, and put to sea. A fair wind filled their patchwork sails and bore them from the hated coast. Day after day they held their course, till at length the favoring breeze died away and a breathless calm fell on the face of the waters. Florida was far behind; France farther yet before. Floating idly on the glassy waste, the craft lay motionless. Their supplies gave out. Twelve kernels of maize a day were each man's portion; then the maize failed, and they ate their shoes and leather jerkins. The water-barrels were drained, and they tried to slake their thirst with brine. Several died, and the rest, giddy with exhaustion and crazed with thirst, were forced to ceaseless labor, baling out the water that gushed through every seam. Head-winds set in, increasing to a gale, and the wretched brigantine, her sails close-reefed, tossed among the savage billows at the mercy of the storm. A heavy sea rolled down upon her, and threw her on her side. The surges broke over her, and, clinging with desperate gripe to spars and cordage, the drenched voyagers gave up all for lost. At length she righted. The gale subsided, the wind changed, and the crazy, water-logged vessel again bore slowly towards France.

Gnawed with deadly famine, they counted the leagues of barren ocean that still stretched before. With haggard, wolfish eyes they gazed on each other, till a whisper passed from man to man, that one, by his death, might ransom all the rest. The choice was made. It fell on La Chère, the same wretched man whom Albert had doomed to starvation on a lonely island, and whose mind was burdened with the fresh memories of his an-

guish and despair. They killed him, and with ravenous avidity portioned out his flesh. The hideous repast sustained them till the French coast rose in sight, when, it is said, in a delirium of insane joy, they could no longer steer their vessel, but let her drift at the will of the tide. A small English bark bore down upon them, took them all on board, and, after landing the feeblest, carried the rest prisoners to Queen Elizabeth.

Thus closed another of those scenes of woe whose lurid clouds were thickly piled around the stormy dawn of American history.

It was but the opening act of a wild and tragic drama. A tempest of miseries awaited those who essayed to plant the banners of France and of Calvin in the Southern forests; and the bloody scenes of the religious war were acted in epitome on the shores of Florida.

HER EPITAPH.

The handful here, that once was Mary's earth,
Held, while it breathed, so beautiful a soul,
That, when she died, all recognized her birth,
And had their sorrow in serene control.

"Not here! not here!" to every mourner's heart
The wintry wind seemed whispering round her bier;
And when the tomb-door opened, with a start
We heard it echoed from within, — "Not here!"

Shouldst thou, sad pilgrim, who mayst hither pass,
Note in these flowers a delicater hue,
Should spring come earlier to this hallowed grass,
Or the bee later linger on the dew,

Know that her spirit to her body lent
Such sweetness, grace, as only goodness can,
That even her dust, and this her monument,
Have yet a spell to stay one lonely man, —

Lonely through life, but looking for the day
When what is mortal of himself shall sleep,
When human passion shall have passed away,
And Love no longer be a thing to weep.

OUTSIDE GLIMPSES OF ENGLISH POVERTY.

Becoming an inhabitant of a great English town, I often turned aside from the prosperous thoroughfares, (where the edifices, the shops, and the bustling crowd differed not so much from scenes with which I was familiar in my own country,) and went designedly astray among precincts that reminded me of some of Dickens's grimiest pages. There I caught glimpses of a people and a mode of life that were comparatively new to my observation, a sort of sombre phantasmagoric spectacle, exceedingly undelightful to behold, yet involving a singular interest and even fascination in its ugliness.

Dirt, one would fancy, is plenty enough all over the world, being the symbolic accompaniment of the foul incrustation which began to settle over and bedim all earthly things as soon as Eve had bitten the apple; ever since which hapless epoch, her daughters have chiefly been engaged in a desperate and unavailing struggle to get rid of it. But the dirt of a poverty-stricken English street is a monstrosity unknown on our side of the Atlantic. It reigns supreme within its own limits, and is inconceivable everywhere beyond them. We enjoy the great advantage, that the brightness and dryness of our atmosphere keep everything clean that the sun shines upon, converting the larger portion of our impurities into transitory dust which the next wind can sweep away, in contrast with the damp, adhesive grime that incorporates itself with all surfaces (unless continually and painfully cleansed) in the chill moisture of the English air. Then the all-pervading smoke of the city, abundantly intermingled with the sable snow-flakes of bituminous coal, hovering overhead, descending, and alighting on pavements and rich architectural fronts, on the snowy muslin of the ladies, and the gentlemen's starched collars and shirt-bosoms, invests even the better streets in a half-mourning garb. It is beyond the resources of Wealth to keep the smut away from its premises or its own fingers' ends; and as for Poverty, it surrenders itself to the dark influence without a struggle. Along with disastrous circumstances, pinching need, adversity so lengthened out as to constitute the rule of life, there comes a certain chill depression of the spirits which seems especially to shudder at cold water. In view of so wretched a state of things, we accept the ancient Deluge not merely as an insulated phenomenon, but as a periodical necessity, and acknowledge that nothing less than such a general washing-day could suffice to cleanse the slovenly old world of its moral and material dirt.

Gin-shops, or what the English call spirit-vaults, are numerous in the vicinity of these poor streets, and are set off with the magnificence of gilded door-posts, tarnished by contact with the unclean customers who haunt there. Ragged children come thither with old shaving-mugs, or broken-nosed tea-pots, or any such make-shift receptacle, to get a little poison or madness for their parents, who deserve no better requital at their hands for having engendered them. Inconceivably sluttish women enter at noonday and stand at the counter among boon-companions of both sexes, stirring up misery and jollity in a bumper together, and quaffing off the mixture with a relish. As for the men, they lounge there continually, drinking till they are drunken, — drinking as long as they have a halfpenny left, and then, as it seemed to me, waiting for a sixpenny miracle to be wrought in their pockets, so as to enable them to be drunken again. Most of these establishments have a significant advertisement of "Beds," doubtless for the accommodation of their customers in the interval between one intoxication and the next. I never could find it in my heart, however, utterly to condemn these sad revellers, and should certainly

THE FLEUR-DE-LIS IN FLORIDA.

[In the July number of this magazine is a sketch of the attempt of the Huguenots, under the auspices of Coligny, to found a colony at Port Royal. Two years later, an attempt was made to establish a Protestant community on the banks of the River St. John's, in Florida. The following paper embodies the substance of the letters and narratives of the actors in this striking episode of American history.]

CHAPTER I.

On the 25th of June, 1564, a French squadron anchored a second time off the mouth of the River of May. There were three vessels, the smallest of sixty tons, the largest of one hundred and twenty, all crowded with men. René de Laudonnière held command. He was of a noble race of Poitou, attached to the House of Châtillon, of which Coligny was the head; pious, we are told, and an excellent marine officer. An engraving, purporting to be his likeness, shows us a slender figure, leaning against the mast, booted to the thigh, with slouched hat and plume, slashed doublet, and short cloak. His thin oval face, with curled moustache and close-trimmed beard, wears a thoughtful and somewhat pensive look, as if already shadowed by the destiny that awaited him.

The intervening year since Ribaut's voyage had been a dark and deadly year for France. From the peaceful solitude of the River of May, that voyager returned to a land reeking with slaughter. But the carnival of bigotry and hate had found a respite. The Peace of Amboise had been signed. The fierce monk choked down his venom; the soldier sheathed his sword; the assassin, his dagger; rival chiefs grasped hands, and masked their rancor under hollow smiles. The king and the queen-mother, helpless amid the storm of factions which threatened their destruction, smiled now on Condé, now on Guise, — gave ear to the Cardinal of Lorraine, or listened in secret to the emissaries of Theodore Beza. Coligny was again strong at Court. He used his opportunity, and solicited with success the means of renewing his enterprise of colonization. With pains and zeal, men were mustered for the work. In name, at least, they were all Huguenots; yet again, as before, the staple of the projected colony was unsound: soldiers, paid out of the royal treasury, hired artisans and tradesmen, joined with a swarm of volunteers from the young Huguenot noblesse, whose restless swords had rusted in their scabbards since the peace. The foundation-stone was left out. There were no tillers of the soil. Such, indeed, were rare among the Huguenots; for the dull peasants who guided the plough clung with blind tenacity to the ancient faith. Adventurous gentlemen, reckless soldiers, discontented tradesmen, all keen for novelty and heated with dreams of wealth, — these were they who would build for their country and their religion an empire beyond the sea.

With a few officers and twelve soldiers, Laudonnière landed where Ribaut had landed before him; and as their boat neared the shore, they saw an Indian chief who ran to meet them, whooping and clamoring welcome from afar. It was Satouriona, the savage potentate who ruled some thirty villages around the lower St. John's and northward along the coast. With him came two stalwart sons, and behind trooped a host of tribesmen arrayed in smoke-tanned deerskins stained with wild devices in gaudy colors. They crowded around the voyagers with beaming visages and yelps of gratulation. The royal Satouriona could not contain the exuberance of his joy, since in the person of the French commander he recognized the brother of the Sun, descended from the skies to aid him against his great rival, Outina.

Hard by stood the column of stone,

graven with the fleur-de-lis, planted here on the former voyage. The Indians had crowned the mystic emblem with evergreens, and placed offerings of maize on the ground before it; for with an affectionate and reverent wonder they had ever remembered the steel-clad strangers whom, two summers before, John Ribaut had led to their shores.

Five miles up the St. John's, or River of May, there stands, on the southern bank, a hill some forty feet high, boldly thrusting itself into the broad and lazy waters. It is now called St. John's Bluff. Thither the Frenchmen repaired, pushed through the dense semi-tropical forest, and climbed the steep acclivity. Thence they surveyed their Canaan. Beneath them moved the unruffled river, gliding around the reed-grown shores of marshy islands, the haunt of alligators, and betwixt the bordering expanse of wide, wet meadows, studded with island-like clumps of pine and palmetto, and bounded by the sunny verge of distant forests. Far on their right, seen by glimpses between the shaggy cedar-boughs, the glistening sea lay stretched along the horizon. Before, in hazy distance, the softened green of the woodlands was veined with the mazes of the countless interlacing streams that drain the watery region behind St. Mary's and Fernandina. To the left, the St. John's flowed gleaming betwixt verdant shores beyond whose portals lay the El Dorado of their dreams. "Briefly," writes Laudonnière, "the place is so pleasant that those which are melancholicke would be inforced to change their humour."

A fresh surprise awaited them. The allotted span of mortal life was quadrupled in that benign climate. Laudonnière's lieutenant, Ottigny, ranging the neighboring forest with a party of soldiers, met a troop of Indians who invited him to their dwellings. Mounted on the back of a stout savage, who plunged with him through the deep marshes, and guided him by devious pathways through the tangled thickets, he arrived at length, and beheld a wondrous spectacle. In the lodge sat a venerable chief, who assured him that he was the father of five successive generations, and that he had lived two hundred and fifty years. Opposite, sat a still more ancient veteran, the father of the first, shrunken to a mere anatomy, and "seeming to be rather a dead carkeis than a living body." "Also," pursues the history, "his age was so great that the good man had lost his sight, and could not speak one onely word but with exceeding great paine." Despite his dismal condition, the visitor was told that he might expect to live in the course of Nature thirty or forty years more. As the two patriarchs sat face to face, half hidden with their streaming white hair, Ottigny and his credulous soldiers looked from one to the other, lost in wonder and admiration.

Man and Nature alike seemed to mark the borders of the River of May as the site of the new colony; for here, around the Indian towns, the harvests of maize, beans, and pumpkins promised abundant food, while the river opened a ready way to the mines of gold and silver and the stores of barbaric wealth which glittered before the dreaming vision of the colonists. Yet, the better to content himself and his men, Laudonnière weighed anchor, and sailed for a time along the neighboring coasts. Returning, confirmed in his first impression, he set forth with a party of officers and soldiers to explore the borders of the chosen stream. The day was hot. The sun beat fiercely on the woollen caps and heavy doublets of the men, till at length they gained the shade of one of those deep forests of pine where the dead and sultry air is thick with resinous odors, and the earth, carpeted with fallen leaves, gives no sound beneath the foot. Yet, in the stillness, deer leaped up on all sides as they moved along. Then they emerged into sunlight. A broad meadow, a running brook, a lofty wall of encircling forests. The men called it the Vale of Laudonnière. The afternoon was spent, and the sun was near its setting, when they reached the bank of the river. They

strewed the ground with boughs and leaves, and, stretched on that sylvan couch, slept the sleep of travel-worn and weary men.

At daybreak they were roused by sound of trumpet. Men and officers joined their voices in a psalm, then betook themselves to their task. Their task was the building of a fort, and this was the chosen spot. It was a tract of dry ground on the brink of the river, immediately above St. John's Bluff. On the right was the bluff; on the left, a marsh; in front, the river; behind, the forest.

Boats came up the stream with laborers, tents, provision, cannon, and tools. The engineers marked out the work in the form of a triangle; and, from the noble volunteer to the meanest artisan, all lent a hand to complete it. On the river side the defences were a palisade of timber. On the two other sides were a ditch, and a rampart of fascines, earth, and sods. At each angle was a bastion, in one of which was the magazine. Within was a spacious parade, and around it various buildings for lodging and storage. A large house with covered galleries was built on the side towards the river for Laudonnière and his officers. In honor of Charles IX. the fort was named Fort Caroline.

Meanwhile, Satouriona, "lord of all that country," as the narratives style him, was seized with misgivings, learning these mighty preparations. The work was but begun, and all was din and confusion around the incipient fort, when the startled Frenchmen saw the neighboring height of St. John's swarming with naked warriors. The prudent Laudonnière set his men in array, and for a season pick and spade were dropped for arquebuse and pike. The savage potentate descended to the camp. The artist Le Moyne, who saw him, drew his likeness from memory, — a tall, athletic figure, tattooed in token of his rank, plumed with feathers, hung with strings of beads, and girdled with tinkling pieces of metal which hung from the belt, his only garment. He came in regal state, a crowd of warriors around him, and, in advance, a troop of young Indians armed with spears. Twenty musicians followed, blowing a hideous discord through pipes of reeds. Arrived, he seated himself on the ground "like a monkey," as Le Moyne has it in the grave Latin of his "Brevis Narratio." A council followed, in which broken words were aided by signs and pantomime. A treaty of alliance was made, and Laudonnière had the folly to promise the chief that he would lend him aid against his enemies. Satouriona, well pleased, ordered his Indians to aid the French at their work. They obeyed with alacrity, and in two days the buildings of the fort were all thatched after the native fashion with leaves of the palmetto.

A word touching these savages. In the peninsula of Florida were several distinct Indian confederacies, with three of which the French were brought into contact. The first was that of Satouriona. The next was the potent confederacy of the Thimagoa, under a chief called Outina, whose forty villages were scattered among the lakes and forests around the upper waters of this remarkable river. The third was that of "King Potanou," whose domain lay among the pine-barrens, cypress-swamps, and fertile hummocks, westward and northwestward of the St. John's. The three communities were at deadly enmity. Their social state was more advanced than that of the wandering hunter-tribes of the North. They were an agricultural people. Around all their villages were fields of maize, beans, and pumpkins. The harvest, due chiefly to the labor of the women, was gathered into a public granary, and on this they lived during three-fourths of the year, dispersing in winter to hunt among the forests.

Their villages were clusters of huts thatched with palmetto. In the midst was the dwelling of the chief, much larger than the rest, and sometimes raised on an artificial mound. They were inclosed with palisades, and, strange to say, some of them were approached by wide

avenues, artificially graded, and several hundred yards in length. Remains of them may still be seen, as may also the mounds in which the Floridians, like the Hurons and various other tribes, collected at stated intervals the bones of their dead.

The most prominent feature of their religion was sun-worship, and, like other wild American tribes, they abounded in "medicine-men," who combined the functions of priest, physician, and necromancer.

Social distinctions were sharply defined among them. Their chiefs, whose office was hereditary, sometimes exercised a power almost absolute. Each village had its chief, subordinate to the grand chief of the nation. In the language of the French narratives, they were all kings or lords, vassals of the great monarch Satouriona, Outina, or Potanou. All these tribes are now extinct, and it is difficult to ascertain with precision their tribal affinities. There can be no doubt that they were the authors of the mounds and other remains at present found in various parts of Florida.

Their fort nearly finished, and their league made with Satouriona, the gold-hunting Huguenots were eager to spy out the secrets of the interior. To this end the lieutenant, Ottigny, went up the river in a sail-boat. With him were a few soldiers and two Indians, the latter going forth, says Laudonnière, as if bound to a wedding, keen for a fight with the hated Thimagoa, and exulting in the havoc to be wrought among them by the magic weapons of their white allies. They were doomed to grievous disappointment.

The Sieur d'Ottigny spread his sail, and calmly glided up the dark waters of the St. John's. A scene fraught with strange interest to the naturalist and the lover of Nature. Here, two centuries later, the Bartrams, father and son, guided their skiff and kindled their nightly bivouac-fire; and here, too, roamed Audubon, with his sketch-book and his gun. Each alike has left the record of his wanderings, fresh as the woods and waters that inspired it. Slight, then, was the change since Ottigny, first of white men, steered his bark along the still breast of the virgin river. Before him, like a lake, the redundant waters spread far and wide; and along the low shores, or jutting points, or the waveless margin of deep and sheltered coves, towered wild, majestic forms of vegetable beauty. Here rose the magnolia, high above surrounding woods; but the gorgeous bloom had fallen, that a few weeks earlier studded the verdant dome with silver. From the edge of the bordering swamp the cypress reared its vast buttressed column and leafy canopy. From the rugged arms of oak and pine streamed the gray drapery of the long Spanish moss, swayed mournfully in the faintest breeze. Here were the tropical plumage of the palm, the dark green masses of the live-oak, the glistening verdure of wild orange-groves; and from out the shadowy thickets hung the wreaths of the jessamine and the scarlet trumpets of the bignonia.

Nor less did the fruitful river teem with varied forms of animal life. From the caverns of leafy shade came the gleam and flicker of many-colored plumage. The cormorant, the pelican, the heron, floated on the water, or stalked along its pebbly brink. Among the sedges, the alligator, foul from his native mud, outstretched his hideous length, or, sluggish and sullen, drifted past the boat, his grim head level with the surface, and each scale, each folding of his horny hide, distinctly visible, as, with the slow movement of distended paws, he balanced himself in the water. When, at sunset, they drew up their boat on the strand, and built their camp-fire under the arches of the woods, the shores resounded with the roaring of these colossal lizards; all night the forest rang with the whooping of the owls; and in the morning the sultry mists that wrapped the river were vocal, far and near, with the clamor of wild turkeys.

Among such scenes, for twenty leagues, the adventurous sail moved on. Far to the right, beyond the silent waste of

pines, lay the realm of the mighty Potanou. The Thimagoa towns were still above them on the river, when they saw three canoes of this people at no great distance in front. Forthwith the two Indians in the boat were fevered with excitement. With glittering eyes they snatched pike and sword, and prepared for fight; but the sage Ottigny, bearing slowly down on the strangers, gave them time to run their craft ashore and escape to the woods. Then, landing, he approached the canoes, placed in them a few trinkets, and withdrew to a distance. The fugitives took heart, and, step by step, returned. An amicable intercourse was opened, with assurances of friendship on the part of the French, a procedure viewed by Satouriona's Indians with unspeakable disgust and ire.

The ice thus broken, Ottigny returned to Fort Caroline; and a fortnight later, an officer named Vasseur sailed up the river to pursue the adventure: for the French, thinking that the nation of the Thimagoa lay betwixt them and the gold-mines, would by no means quarrel with them, and Laudonnière repented him already of his rash pledge to Satouriona.

As Vasseur moved on, two Indians hailed him from the shore, inviting him to their dwellings. He accepted their guidance, and presently saw before him the cornfields and palisades of an Indian town. Led through the wondering crowd to the lodge of the chief, Mollua, Vasseur and his followers were seated in the place of honor and plentifully regaled with fish and bread. The repast over, Mollua began his discourse. He told them that he was one of the forty vassal chiefs of the great Outina, lord of all the Thimagoa, whose warriors wore armor of gold and silver plate. He told them, too, of Potanou, his enemy, a mighty and redoubted prince; and of the two kings of the distant Appalachian Mountains, rich beyond utterance in gems and gold. While thus, with earnest pantomime and broken words, the chief discoursed with his guests, Vasseur, intent and eager, strove to follow his meaning; and no sooner did he hear of these Appalachian treasures than he promised to join Outina in war against the two potentates of the mountains. Hereupon the sagacious Mollua, well pleased, promised that each of Outina's vassal chiefs should requite their French allies with a heap of gold and silver two feet high. Thus, while Laudonnière stood pledged to Satouriona, Vasseur made alliance with his mortal enemy.

Returning, he was met, near the fort, by one of Satouriona's chiefs, who questioned him touching his dealings with the Thimagoa. Vasseur replied, that he had set upon and routed them with incredible slaughter. But as the chief, seeming as yet unsatisfied, continued his inquiries, the sergeant, Francis la Caille, drew his sword, and, like Falstaff before him, reenacted his deeds of valor, pursuing and thrusting at the imaginary Thimagoa as they fled before his fury. Whereat the chief, at length convinced, led the party to his lodge, and entertained them with a certain savory decoction with which the Indians were wont to regale those whom they delighted to honor.

Elate at the promise of a French alliance, Satouriona had summoned his vassal chiefs to war. From the St. Mary's and the Satilla and the distant Altamaha, from every quarter of his woodland realm, they had mustered at his call. By the margin of the St. John's, the forest was alive with their bivouacs. Ten chiefs were here, and some five hundred men. And now, when all was ready, Satouriona reminded Laudonnière of his promise, and claimed its fulfilment; but the latter gave evasive answers and a virtual refusal. Stifling his rage, the chief prepared to go without him.

Near the bank of the river, a fire was kindled, and two large vessels of water placed beside it. Here Satouriona took his stand. His chiefs crouched on the grass around him, and the savage visages of his five hundred warriors filled the outer circle, their long hair garnished with feathers, or covered with the heads

and skins of wolves, panthers, bears, or eagles. Satouriona, looking towards the country of his enemy, distorted his features to a wild expression of rage and hate; then muttered to himself; then howled an invocation to his god, the sun; then besprinkled the assembly with water from one of the vessels, and, turning the other upon the fire, suddenly quenched it. "So," he cried, "may the blood of our enemies be poured out, and their lives extinguished!" and the concourse gave forth an explosion of responsive yells, till the shores resounded with the wolfish din.

The rites over, they set forth, and in a few days returned exulting with thirteen prisoners and a number of scalps. The latter were hung on a pole before the royal lodge, and when night came, it brought with it a pandemonium of dancing and whooping, drumming and feasting.

A notable scheme entered the brain of Laudonnière. Resolved, cost what it might, to make a friend of Outina, he conceived it a stroke of policy to send back to him two of the prisoners. In the morning he sent a soldier to Satouriona to demand them. The astonished chief gave a flat refusal, adding that he owed the French no favors, for they had shamefully broken faith with him. On this, Laudonnière, at the head of twenty soldiers, proceeded to the Indian town, placed a guard at the opening of the great lodge, entered with his arquebusiers, and seated himself without ceremony in the highest place. Here, to show his displeasure, he remained in silence for a half-hour. At length he spoke, renewing his demand. For some moments Satouriona made no reply, then coldly observed that the sight of so many armed men had frightened the prisoners away. Laudonnière grew peremptory, when the chief's son, Athore, went out, and presently returned with the two Indians, whom the French led back to Fort Caroline.

Satouriona dissembled, professed good-will, and sent presents to the fort; but the outrage rankled in his savage breast, and he never forgave it.

Captain Vasseur, with Arlac, the ensign, a sergeant, and ten soldiers, embarked to bear the ill-gotten gift to Outina. Arrived, they were showered with thanks by that grateful potentate, who, hastening to avail himself of his new alliance, invited them to join in a raid against his neighbor, Potanou. To this end, Arlac and five soldiers remained, while Vasseur with the rest descended to Fort Caroline.

The warriors were mustered, the dances were danced, and the songs were sung. Then the wild cohort took up its march. The wilderness through which they passed holds its distinctive features to this day, — the shady desert of the pine-barrens, where many a wanderer has miserably died, with haggard eye seeking in vain for clue or guidance in the pitiless, inexorable monotony. Yet the waste has its oases, the "hummocks," where the live-oaks are hung with long festoons of grape-vines, — where the air is sweet with woodland odors, and vocal with the song of birds. Then the deep cypress-swamp, where dark trunks rise like the columns of some vast sepulchre. Above, the impervious canopy of leaves; beneath, a black and root-encumbered slough. Perpetual moisture trickles down the clammy bark, while trunk and limb, distorted with strange shapes of vegetable disease, wear in the gloom a semblance grotesque and startling. Lifeless forms lean propped in wild disorder against the living, and from every rugged stem and lank limb outstretched hangs the dark drapery of the Spanish moss. The swamp is veiled in mourning. No breath, no voice. A deathly stillness, till the plunge of the alligator, lashing the waters of the black lagoon, resounds with hollow echo through the tomb-like solitude.

Next, the broad sunlight and the wide savanna. Wading breast-deep in grass, they view the wavy sea of verdure, with headland and cape and far-reaching promontory, with distant coasts,

hazy and dim, havens and shadowed coves, islands of the magnolia and the palm, high, impending shores of the mulberry and the elm, the ash, hickory, and maple. Here the rich *gordonia*, never out of bloom, sends down its thirsty roots to drink at the stealing brook. Here the *halesia* hangs out its silvery bells, the purple clusters of the *wistaria* droop from the supporting bough, and the coral blossoms of the *erythryna* glow in the shade beneath. From tufted masses of sword-like leaves shoot up the tall spires of the *yucca*, heavy with pendent flowers, of pallid hue, like the moon, and from the grass gleams the blue eye of the starry *ixia*.

Through forest, swamp, savanna, the valiant Frenchmen held their way. At first, Outina's Indians kept always in advance; but when they reached the hostile district, the modest warriors fell to the rear, resigning the post of honor to their French allies.

An open country; a rude cultivation; the tall palisades of an Indian town. Their approach was seen, and the warriors of Potanou, nowise daunted, came swarming forth to meet them. But the sight of the bearded strangers, the flash and report of the fire-arms, the fall of their foremost chief, shot through the brain with the bullet of Arlac, filled them with consternation, and they fled headlong within their defences. The men of Thimagoa ran screeching in pursuit. Pell-mell, all entered the town together. Slaughter; pillage; flame. The work was done, and the band returned triumphant.

CHAPTER II.

In the little world of Fort Caroline, a miniature France, cliques and parties, conspiracy and sedition, were fast stirring into life. Hopes had been dashed; wild expectations had come to nought. The adventurers had found, not conquest and gold, but a dull exile in a petty fort by a hot and sickly river, with hard labor, ill fare, prospective famine, and nothing to break the weary sameness but some passing canoe or floating alligator. Gathered in knots, they nursed each other's wrath, and inveighed against the commandant.

Why are we put on half-rations, when he told us that provision should be made for a full year? Where are the reinforcements and supplies that he said should follow us from France? Why is he always closeted with Ottigny, Arlac, and this and that favorite, when we, men of blood as good as theirs, cannot gain his ear for a moment? And why has he sent La Roche Ferrière to make his fortune among the Indians, while we are kept here, digging at the works?

Of La Roche Ferrière and his adventures, more hereafter. The young nobles, of whom there were many, were volunteers, who had paid their own expenses, in expectation of a golden harvest, and they chafed in impatience and disgust. The religious element in the colony — unlike the former Huguenot emigration to Brazil — was evidently subordinate. The adventurers thought more of their fortunes than of their faith; yet there were not a few earnest enough in the doctrine of Geneva to complain loudly and bitterly that no ministers had been sent with them. The burden of all grievances was thrown upon Laudonnière, whose greatest errors seem to have arisen from weakness and a lack of judgment, — fatal defects in his position.

The growing discontent was brought to a partial head by one Roquette, who gave out that by magic he had discovered a mine of gold and silver, high up the river, which would give each of them a share of ten thousand crowns, besides fifteen hundred thousand for the king. But for Laudonnière, he said, their fortunes would all be made. He found an ally in a gentleman named Genre, one of Laudonnière's confidants, who, still professing fast adherence to the interests of the latter, is charged by him with plotting against his life. Many of the soldiers were in the conspiracy. They

made a flag of an old shirt, which they carried with them to the rampart when they went to their work, at the same time wearing their arms, and watching an opportunity to kill the commandant. About this time, overheating himself, he fell ill, and was confined to his quarters. On this, Genre made advances to the apothecary, urging him to put arsenic into his medicines; but the apothecary shrugged his shoulders. They next devised a scheme to blow him up, by hiding a keg of gunpowder under his bed; but here, too, they failed. Hints of Genre's machinations reaching the ears of Laudonnière, the culprit fled to the woods, whence he wrote repentant letters, with full confession, to his commander.

Two of the ships meanwhile returned to France, — the third, the Breton, remaining at anchor opposite the fort. The malecontents took the opportunity to send home charges against Laudonnière of peculation, favoritism, and tyranny.

Early in September, Captain Bourdet, apparently a private adventurer, had arrived from France with a small vessel. When he returned, about the tenth of November, Laudonnière persuaded him to carry home seven or eight of the malecontent soldiers. Bourdet left some of his sailors in their place. The exchange proved most disastrous. These pirates joined with others whom they had won over, stole Laudonnière's two pinnaces, and set forth on a plundering excursion to the West Indies. They took a small Spanish vessel off the coast of Cuba, but were soon compelled by famine to put into Havana and surrender themselves. Here, to make their peace with the authorities, they told all they knew of the position and purposes of their countrymen at Fort Caroline, and hence was forged the thunderbolt soon to be hurled against the wretched little colony.

On a Sunday morning, Francis de la Caille came to Laudonnière's quarters, and, in the name of the whole company, requested him to come to the parade-ground. He complied, and, issuing forth, his inseparable Ottigny at his side, saw some thirty of his officers, soldiers, and gentlemen-volunteers waiting before the building with fixed and sombre countenance. La Caille, advancing, begged leave to read, in behalf of the rest, a paper which he held in his hand. It opened with protestations of duty and obedience; next came complaints of hard work, starvation, and broken promises, and a request that the petitioners should be allowed to embark in the vessel lying in the river, and cruise along the Spanish main in order to procure provision by purchase "or otherwise." In short, the flower of the company wished to turn buccaneers.

Laudonnière refused, but assured them, that, so soon as the defences of the fort should be completed, a search should be begun in earnest for the Appalachian gold-mine, and that meanwhile two small vessels then building on the river should be sent along the coast to barter for provisions with the Indians. With this answer they were forced to content themselves; but the fermentation continued, and the plot thickened. Their spokesman, La Caille, however, seeing whither the affair tended, broke with them, and, beside Ottigny, Vasseur, and the brave Swiss, Arlac, was the only officer who held to his duty.

A severe illness again seized Laudonnière and confined him to his bed. Improving their advantage, the malecontents gained over nearly all the best soldiers in the fort. The ringleader was one Fourneaux, a man of good birth, but whom Le Moyne calls an avaricious hypocrite. He drew up a paper to which sixty-six names were signed. La Caille boldly opposed the conspirators, and they resolved to kill him. His room-mate, Le Moyne, who had also refused to sign, received a hint from a friend that he had better change his quarters; upon which he warned La Caille, who escaped to the woods. It was late in the night. Fourneaux, with twenty men armed to the teeth, knocked fiercely at the commandant's door. Forcing an entrance, they

wounded a gentleman who opposed them, and crowded around the sick man's bed. Fourneaux, armed with steel cap and cuirass, held his arquebuse to Laudonnière's breast, and demanded leave to go on a cruise among the Spanish islands. The latter kept his presence of mind, and remonstrated with some firmness; on which, with oaths and menaces, they dragged him from his bed, put him in fetters, carried him out to the gate of the fort, placed him in a boat, and rowed him to the ship anchored in the river.

Two other gangs at the same time visited Ottigny and Arlac, whom they disarmed, and ordered to keep their rooms till the night following, on pain of death. Smaller parties were busied, meanwhile, in disarming all the loyal soldiers. The fort was completely in the hands of the conspirators. Fourneaux drew up a commission for his meditated West-India cruise, which he required Laudonnière to sign. The sick commandant, imprisoned in the ship, with one attendant, at first refused; but, receiving a message from the mutineers, that, if he did not comply, they would come on board and cut his throat, he at length yielded.

The buccaneers now bestirred themselves to finish the two small vessels on which the carpenters had been for some time at work. In a fortnight they were ready for sea, armed and provided with the king's cannon, munitions, and stores. Trenchant, an excellent pilot, was forced to join the party. Their favorite object was the plunder of a certain church, on one of the Spanish islands, which they proposed to assail during the midnight mass of Christmas, whereby a triple end would be achieved: first, a rich booty; secondly, the punishment of idolatry; thirdly, vengeance on the arch-enemies of their party and their faith. They set sail on the eighth of December, taunting those who remained, calling them greenhorns, and threatening condign punishment, if, on their triumphant return, they should be refused free entrance to the fort.

They were no sooner gone than the unfortunate Laudonnière was gladdened in his solitude by the approach of his fast friends, Ottigny and Arlac, who conveyed him to the fort, and reinstated him. The entire command was reorganized and new officers appointed. The colony was wofully depleted; but the bad blood had been drawn, and thenceforth all internal danger was at an end. In finishing the fort, in building two new vessels to replace those of which they had been robbed, and in various intercourse with the tribes far and near, the weeks passed until the twenty-fifth of March, when an Indian came in with the tidings that a vessel was hovering off the coast. Laudonnière sent to reconnoitre. The stranger lay anchored at the mouth of the river. She was a Spanish brigantine, manned by the returning mutineers, starving, downcast, and anxious to make terms. Yet, as their posture seemed not wholly pacific, Laudonnière sent down La Caille with thirty soldiers, concealed at the bottom of his little vessel. Seeing only two or three on deck, the pirates allowed her to come along-side; when, to their amazement, they were boarded and taken before they could snatch their arms. Discomfited, woebegone, and drunk, they were landed under a guard. Their story was soon told. Fortune had flattered them at the outset. On the coast of Cuba, they took a brigantine, with wine and stores. Embarking in her, they next fell in with a caravel, which they also captured. Landing at a village of Jamaica, they plundered and caroused for a week, and had hardly reëmbarked when they fell in with a small vessel having on board the governor of the island. She made desperate fight, but was taken at last, and with her a rich booty. They thought to put the governor to ransom; but the astute official deceived them, and, on pretence of negotiating for the sum demanded, together with certain apes and parrots, for which his captors had also bargained,

contrived to send instructions to his wife. Whence it happened that at daybreak three armed vessels fell upon them, retook the prize, and captured or killed all the pirates but twenty-six, who, cutting the moorings of their brigantine, fled out to sea. Among these was the ringleader, Fourneaux, and, happily, the pilot, Trenchant. The latter, eager to return to Fort Caroline, whence he had been forcibly taken, succeeded during the night in bringing the vessel to the coast of Florida. Great were the wrath and consternation of the discomfited pirates, when they saw their dilemma; for, having no provision, they must either starve or seek succor at the fort. They chose the latter alternative, and bore away for the St. John's. A few casks of Spanish wine yet remained, and nobles and soldiers, fraternized by the common peril of a halter, joined in a last carouse. As the wine mounted to their heads, in the mirth of drink and desperation, they enacted their own trial. One personated the judge, another the commandant; witnesses were called, with arguments and speeches on either side.

"Say what you like," said one of them, after hearing the counsel for the defence, "but if Laudonnière does not hang us all, I will never call him an honest man."

They had some hope of gaining provision from the Indians at the mouth of the river, and then putting to sea again; but this was frustrated by La Caille's sudden attack. A court-martial was called near Fort Caroline, and all were found guilty. Fourneaux and three others were sentenced to be hanged.

"Comrades," said one of the condemned, appealing to the soldiers, "will you stand by and see us butchered?"

"These," retorted Laudonnière, "are no comrades of mutineers and rebels."

At the request of his followers, however, he commuted the sentence to shooting.

A file of men; a rattling volley; and the debt of justice was paid. The bodies were hanged on gibbets at the river's mouth, and order reigned at Fort Caroline.

CHAPTER III.

While the mutiny was brewing, one La Roche Ferrière had been sent out as an agent or emissary among the more distant tribes. Sagacious, bold, and restless, he pushed his way from town to town, and pretended to have reached the mysterious mountains of Appalachee. He sent to the fort mantles woven with feathers, quivers covered with choice furs, arrows tipped with gold, wedges of a green stone like beryl or emerald, and other trophies of his wanderings. A gentleman named Grotaut took up the quest, and penetrated to the dominions of Hostaqua, who could muster three or four thousand warriors, and who promised with the aid of a hundred arquebusiers to conquer all the kings of the adjacent mountains, and subject them and their gold-mines to the rule of the French. A humbler adventurer was Peter Gambie, a robust and daring youth, who had been brought up in the household of Coligny, and was now a soldier under Laudonnière. The latter gave him leave to trade with the Indians, a privilege which he used so well that he grew rich with his traffic, became prime favorite with the chief of Edelano, married his daughter, and, in his absence, reigned in his stead. But, as his sway verged towards despotism, his subjects took offence, and beat out his brains with a hatchet.

During the winter, Indians from the neighborhood of Cape Canaveral brought to the fort two Spaniards, wrecked fifteen years before on the southwestern extremity of the peninsula. They were clothed like the Indians, — in other words, were not clothed at all, — and their uncut hair streamed wildly down their backs. They brought strange tales of those among whom they had dwelt. They told of the King of Calos, on whose domains they had suffered wreck, a chief mighty in stature and in power. In one of his

villages was a pit, six feet deep and as wide as a hogshead, filled with treasure gathered from Spanish wrecks on adjacent reefs and keys. The monarch was a priest, too, and a magician, with power over the elements. Each year he withdrew from the public gaze to hold converse in secret with supernal or infernal powers; and each year he sacrificed to his gods one of the Spaniards whom the fortune of the sea had cast upon his shores. The name of the tribe is preserved in that of the River Caloosa. In close league with him was the mighty Oathcaqua, dwelling near Cape Canaveral, who gave his daughter, a maiden of wondrous beauty, in marriage to his great ally. But, as the bride, with her bridesmaids, was journeying towards Calos, escorted by a chosen band, they were assailed by a wild and warlike race, inhabitants of an island called Sarrope, in the midst of a great lake, who put the warriors to flight, bore the maidens captive to their watery fastness, espoused them all, and, as we are assured, "loved them above all measure."

Outina, taught by Arlac the efficacy of the French fire-arms, begged for ten arquebusiers to aid him on a new raid among the villages of Potanou, again alluring his greedy allies by the assurance, that, thus reinforced, he would conquer for them a free access to the phantom gold-mines of Appalachee. Ottigny set forth on this fool's-errand with thrice the force demanded. Three hundred Thimagoa and thirty Frenchmen took up their march through the pine-barrens. Outina's conjurer was of the number, and had well-nigh ruined the enterprise. Kneeling on Ottigny's shield, that he might not touch the earth, with hideous grimaces, howlings, and contortions, he wrought himself into a prophetic frenzy, and proclaimed to the astounded warriors that to advance farther would be destruction. Outina was for instant retreat, but Ottigny's sarcasms shamed him into a show of courage. Again they moved forward, and soon encountered Potanou with all his host. Le Moyne drew a picture of the fight. In the foreground Ottigny is engaged in single combat with a gigantic savage, who, with club upheaved, aims a deadly stroke at the plumed helmet of his foe; but the latter, with target raised to guard his head, darts under the arms of the naked Goliath, and transfixes him with his sword. The arquebuse did its work: panic, slaughter, and a plentiful harvest of scalps. But no persuasion could induce Outina to follow up his victory. He went home to dance around his trophies, and the French returned disgusted to Fort Caroline.

And now, in ample measure, the French began to reap the harvest of their folly. Conquest, gold, military occupation, — such had been their aims. Not a rood of ground had been stirred with the spade. Their stores were consumed; the expected supplies had not come. The Indians, too, were hostile. Satouriona hated them as allies of his enemies; and his tribesmen, robbed and maltreated by the lawless soldiers, exulted in their miseries. Yet in these, their dark and subtle neighbors, was their only hope.

May-day came, the third anniversary of the day when Ribaut and his companions, full of delighted anticipations, had explored the flowery borders of the St. John's. Dire was the contrast; for, within the homesick precinct of Fort Caroline, a squalid band, dejected and worn, dragged their shrunken limbs about the sun-scorched area, or lay stretched in listless wretchedness under the shade of the barracks. Some were digging roots in the forest, or gathering a kind of sorrel upon the meadows. One collected refuse fish-bones and pounded them into meal. Yet, giddy with weakness, their skin clinging to their bones, they dragged themselves in turn to the top of St. John's Bluff, straining their eyes across the sea to descry the anxiously expected sail.

Had Coligny left them to perish? or had some new tempest of calamity, let loose upon France, drowned the memory of their exile? In vain the watchman

on the hill surveyed the solitude of waters. A deep dejection fell upon them, a dejection that would have sunk to despair, could their eyes have pierced the future.

The Indians had left the neighborhood, but, from time to time, brought in meagre supplies of fish, which they sold to the famished soldiers at exorbitant prices. Lest they should pay the penalty of their extortion, they would not enter the fort, but lay in their canoes in the river, beyond gunshot, waiting for their customers to come out to them. "Oftentimes," says Laudonnière, "our poor soldiers were constrained to give away the very shirts from their backs to get one fish. If at any time they shewed unto the savages the excessive price which they tooke, these villaines would answere them roughly and churlishly: If thou make so great account of thy marchandise, eat it, and we will eat our fish: then fell they out a laughing and mocked us with open throat."

The spring wore away, and no relief appeared. One thought now engrossed the colonists, the thought of return to France. Vasseur's ship, the Breton, still remained in the river, and they had also the Spanish brigantine brought by the mutineers. But these vessels were insufficient, and they prepared to build a new one. The energy of reviving hope lent new life to their exhausted frames. Some gathered pitch in the pine forests; some made charcoal; some cut and sawed the timber. The maize began to ripen, and this brought some relief; but the Indians, exasperated and greedy, sold it with reluctance, and murdered two half-famished Frenchmen who gathered a handful in the fields.

The colonists applied to Outina, who owed them two victories. The result was a churlish message and a niggardly supply of corn, coupled with an invitation to aid him against an insurgent chief, the plunder of whose villages would yield an ample supply. The offer was accepted. Ottigny and Vasseur set forth, but were grossly deceived, led against a different enemy, and sent back empty-handed and half-starved.

Pale with famine and with rage, a crowd of soldiers beset Laudonnière, and fiercely demanded to be led against Outina to take him prisoner and extort from his fears the supplies which could not be looked for from his gratitude. The commandant was forced to comply. Those who could bear the weight of their armor put it on, embarked, to the number of fifty, in two barges, and sailed up the river under the commandant himself. Outina's landing reached, they marched inland, entered his village, surrounded his mud-plastered palace, seized him amid the yells and howlings of his subjects, and led him prisoner to their boats. Here, anchored in mid-stream, they demanded a supply of corn and beans as the price of his ransom.

The alarm spread. Excited warriors, bedaubed with red, came thronging from all his villages. The forest along the shore was full of them; and troops of women gathered at the water's edge with moans, outcries, and gestures of despair. Yet no ransom was offered, since, reasoning from their own instincts, they never doubted, that, the price paid, the captive would be put to death.

Laudonnière waited two days, then descended the river. In a rude chamber of Fort Caroline, pike in hand, the sentinel stood his guard, while before him crouched the captive chief, mute, impassive, brooding on his woes. His old enemy, Satouriona, keen as a hound on the scent of prey, tried, by great offers, to bribe Laudonnière to give the prisoner into his hands. Outina, however, was kindly treated, and assured of immediate freedom on payment of the ransom.

Meanwhile his captivity was entailing dire affliction on his realm; for, despairing of his return, his subjects mustered to the election of a new chief. Party-strife ran high. Some were for a boy, his son, and some for an ambitious kinsman who coveted the vacant throne. Outina chafed in his prison, learning these dissensions, and, eager to convince

his over-hasty subjects that their king still lived, he was so profuse of promises, that he was again embarked and carried up the river.

At no great distance below Lake George, a small affluent of the St. John's gave access by water to a point within eighteen miles of Outina's principal town. The two barges, crowded with soldiers, and bearing also the royal captive, rowed up this little stream. Indians awaited them at the landing, with gifts of bread, beans, and fish, and piteous prayers for their chief, upon whose liberation they promised an ample supply of corn. As they were deaf to all other terms, Laudonnière yielded, released the chief, and received in his place two hostages, who were fast bound in the boats. Ottigny and Arlac, with a strong detachment of arquebusiers, set forth to receive the promised supplies, for which, from the first, full payment in merchandise had been offered. Arrived at the village, they filed into the great central lodge, within whose dusky precincts were gathered the magnates of the tribe. Council-chamber, forum, banquet-hall, dancing-hall, palace, all in one, the royal dwelling could hold half the population in its capacious confines. Here the French made their abode. Their armor buckled, their arquebuse-matches lighted, they stood, or sat, or reclined on the earthen floor, with anxious eyes watching the strange, dim scene, half lighted by the daylight that streamed down through the hole at the apex of the roof. Tall, dark forms stalked to and fro, quivers at their backs, bows and arrows in their hands, while groups, crouched in the shadow beyond, eyed the hated guests with inscrutable visages, and malignant, sidelong eyes. Corn came in slowly, but warriors were mustering fast. The village without was full of them. The French officers grew anxious, and urged the chiefs to greater alacrity in collecting the promised ransom. The answer boded no good. "Our women are afraid, when they see the matches of your guns burning. Put them out, and they will bring the corn faster."

Outina was nowhere to be seen. At length they learned that he was in one of the small huts adjacent. Several of the officers went to him, complaining of the slow payment of his ransom. The kindness of his captors at Fort Caroline seemed to have won his heart. He replied, that such was the rage of his subjects that he could no longer control them,—that the French were in danger, —and that he had seen arrows stuck in the ground by the side of the path, in token that war was declared. Their peril was thickening hourly; and Ottigny resolved to regain the boats while there was yet time.

On the twenty-seventh of July, at nine in the morning, he set his men in order. Each shouldering a sack of corn, they marched through the rows of squalid huts that surrounded the great lodge, and out betwixt the interfolding extremities of the palisade that encircled the town. Before them stretched a wide avenue, three or four hundred paces long, flanked by a natural growth of trees, — one of those curious monuments of native industry to which allusion has been already made. Here Ottigny halted and formed his line of march. Arlac with eight matchlock-men was sent in advance, and flanking parties thrown into the woods on either side. Ottigny told his soldiers, that, if the Indians meant to attack them, they were probably in ambush at the other end of the avenue. He was right. As Arlac's party reached the spot, the whole pack gave tongue at once. The war-whoop quavered through the startled air, and a tempest of stone-headed arrows clattered against the breastplates of the French, or tore, scorching like fire, through their unprotected limbs. They stood firm, and sent back their shot so steadily that several of the assailants were laid dead, and the rest, two or three hundred in number, gave way as Ottigny came up with his men.

They moved on for a quarter of a mile through a country, as it seems, comparatively open; when again the war-cry pealed in front, and three hundred sav-

ages came bounding to the assault. Their whoops were echoed from the rear. It was the party whom Arlac had just repulsed, who, leaping and showering their arrows, were rushing on with a ferocity restrained only by their lack of courage. There was no panic. The men threw down their corn-bags, and took to their weapons. They blew their matches, and, under two excellent officers, stood well to their work. The Indians, on their part, showed a good discipline, after their fashion, and were perfectly under the control of their chiefs. With cries that imitated the yell of owls, the scream of cougars, and the howl of wolves, they ran up in successive bands, let fly their arrows, and instantly fell back, giving place to others. At the sight of the levelled arquebuse, they dropped flat on the earth. Whenever, sword in hand, the French charged upon them, they fled like foxes through the woods; and whenever the march was resumed, the arrows were showering again upon the flanks and rear of the retiring band. The soldiers coolly picked them up and broke them as they fell. Thus, beset with swarming savages, the handful of Frenchmen pushed their march till nightfall, fighting as they went.

The Indians gradually drew off, and the forest was silent again. Two of the French had been killed and twenty-two wounded, several so severely that they were supported to the boats with the utmost difficulty. Of the corn, two bags only had been brought off.

Famine and desperation now reigned at Fort Caroline. The Indians had killed two of the carpenters; hence long delay in the finishing of the new ship. They would not wait, but resolved to put to sea in the Breton and the brigantine. The problem was to find food for the voyage; for now, in their extremity, they roasted and ate snakes, a delicacy in which the neighborhood abounded.

On the third of August, Laudonnière, perturbed and oppressed, was walking on the hill, when, looking seaward, he saw a sight that shot a thrill through his exhausted frame. A great ship was standing towards the river's mouth. Then another came in sight, and another, and another. He called the tidings to the fort below. Then languid forms rose and danced for joy, and voices, shrill with weakness, joined in wild laughter and acclamation.

A doubt soon mingled with their joy. Who were the strangers? Were they the succors so long hoped in vain? or were they Spaniards bringing steel and fire? They were neither. The foremost was a stately ship, of seven hundred tons, a mighty burden at that day. She was named the Jesus; and with her were three smaller vessels, the Solomon, the Tiger, and the Swallow. Their commander was "a right worshipful and valiant knight,"—for so the record styles him, —a pious man and a prudent, to judge him by the orders he gave his crew, when, ten months before, he sailed out of Plymouth:—"Serve God daily, love one another, preserve your victuals, beware of fire, and keepe good companie." Nor were the crew unworthy the graces of their chief; for the devout chronicler of the voyage ascribes their deliverance from the perils of the seas to "the Almightie God, who never suffereth his Elect to perish."

Who, then, were they, this chosen band, serenely conscious of a special Providential care? Apostles of the cross, bearing the word of peace to benighted heathendom? They were the pioneers of that detested traffic destined to inoculate with its black infection nations yet unborn, parent of discord and death, with the furies in their train, filling half a continent with the tramp of armies and the clash of fratricidal swords. Their chief was Sir John Hawkins, father of the English slave-trade.

He had been to the coast of Guinea, where he bought and kidnapped a cargo of slaves. These he had sold to the jealous Spaniards of Hispaniola, forcing them, with sword, matchlock, and culverin, to grant him free trade, and then to sign testimonials that he had borne himself as

became a peaceful merchant. Prospering greatly by this summary commerce, but distressed by the want of water, he had put into the River of May to obtain a supply.

Among the rugged heroes of the British marine, Sir John stood in the front rank, and along with Drake, his relative, is extolled as "a man borne for the honour of the English name. . . . . Neither did the West of England yeeld such an Indian Neptunian paire as were these two Ocean peeres, Hawkins and Drake." So writes the old chronicler, Purchas, and all England was of his thinking. A hardy seaman, a bold fighter, overbearing towards equals, but kind, in his bluff way, to those beneath him, rude in speech, somewhat crafty withal, and avaricious, he buffeted his way to riches and fame, and died at last full of years and honor. As for the abject humanity stowed between the reeking decks of the ship Jesus, they were merely in his eyes so many black cattle tethered for the market. Queen Elizabeth had an interest in the venture, and received her share of the sugar, pearls, ginger, and hides which the vigorous measures of Sir John gained from his Spanish customers.

Hawkins came up the river in a pinnace, and landed at Fort Caroline, "accompanied," says Laudonnière, "with gentlemen honorably apparelled, yet unarmed." Between the Huguenots and the English there was a double tie of sympathy. Both hated priests, and both hated Spaniards. Wakening from their apathetic misery, the starveling garrison hailed him as a deliverer. Yet Hawkins secretly rejoiced, when he learned their purpose to abandon Florida; for, though, not to tempt his cupidity, they hid from him the secret of their Appalachian gold-mine, he coveted for his royal mistress the possession of this rich domain. He shook his head, however, when he saw the vessels in which they proposed to embark, and offered them all a free passage to France in his own ships. This, from obvious motives of honor and prudence, Laudonnière declined, upon which Hawkins offered to lend or sell to him one of his smaller vessels.

Hereupon arose a great clamor. A mob of soldiers and artisans beset Laudonnière's chamber, threatening loudly to desert him, and take passage with Hawkins, unless the offer of the latter were accepted. The commandant accordingly resolved to buy the vessel. The generous slaver, whose reputed avarice nowise appears in the transaction, desired him to set his own price; and, in place of money, took the cannon of the fort, with other articles now useless to their late owners. He sent them, too, a gift of wine and biscuit, and supplied them with provision for the voyage, receiving in payment Laudonnière's note, — "for which," adds the latter, "I am until this present indebted to him." With a friendly leave-taking he returned to his ships and stood out to sea, leaving golden opinions among the grateful inmates of Fort Caroline.

Before the English top-sails had sunk beneath the horizon, the colonists bestirred themselves to depart. In a few days their preparations were made. They waited only for a fair wind. It was long in coming, and meanwhile their troubled fortunes assumed a new phase.

On the twenty-eighth of August, the two captains, Vasseur and Verdier, came in with tidings of an approaching squadron. Again the fort was wild with excitement. Friends or foes, French or Spaniards, succor or death: betwixt these were their hopes and fears divided. With the following morning, they saw seven barges rowing up the river, bristling with weapons and crowded with men in armor. The sentries on the bluff challenged, and received no answer. One of them fired at the advancing boats. Still no response. Laudonnière was almost defenceless. He had given his heavier cannon to Hawkins, and only two field-pieces were left. They were levelled at the foremost boats, and the word was about to be given, when a voice from among the strangers called that they were French, commanded by John Ribaut.

At the eleventh hour, the long-looked-for succors were come. Ribaut had been commissioned to sail with seven ships for Florida. A disorderly concourse of disbanded soldiers, mixed with artisans and their families, and young nobles weary of a two-years' peace, were mustered at the port of Dieppe, and embarked, to the number of three hundred men, bearing with them all things thought necessary to a prosperous colony.

No longer in dread of the Spaniards, the colonists saluted the new-comers with the cannon by which a moment before they had hoped to blow them out of the water. Laudonnière issued from his stronghold to welcome them, and regaled them with what cheer he might. Ribaut was present, conspicuous by his long beard, the astonishment of the Indians; and here, too, were officers, old friends of Laudonnière. Why, then, had they approached in the attitude of enemies? The mystery was soon explained; for they expressed to the commandant their pleasure at finding that the charges made against him had proved false. He begged to know more, on which Ribaut, taking him aside, told him that the returning ships had brought home letters filled with accusations of arrogance, tyranny, cruelty, and a purpose of establishing an independent command: accusations which he now saw to be unfounded, but which had been the occasion of his unusual and startling precaution. He gave him, too, a letter from the Admiral Coligny. In brief, but courteous terms, it required him to resign his command, and invited his return to France to clear his name from the imputations cast upon it. Ribaut warmly urged him to remain; but Laudonnière declined his friendly proposals.

Worn in body and mind, mortified and wounded, he soon fell ill again. A peasant-woman attended him, brought over, he says, to nurse the sick and take charge of the poultry, and of whom Le Moyne also speaks as a servant, but who had been made the occasion of additional charges against him, most offensive to the austere Admiral.

Stores were landed, tents were pitched, women and children were sent on shore, feathered Indians mingled in the throng, and the sunny borders of the River of May swarmed with busy life. "But, lo, how oftentimes misfortune doth search and pursue us, even then when we thinke to be at rest!" exclaims the unhappy Laudonnière. Behind the light and cheer of renovated hope, a cloud of blackest omen was gathering in the east.

At half-past eleven on the night of Tuesday, the fourth of September, the crew of Ribaut's flag-ship, anchored on the still sea outside the bar, saw a huge hulk, grim with the throats of cannon, drifting towards them through the gloom; and from its stern rolled on the sluggish air the portentous banner of Spain.

Here opens a wilder act of this eventful drama. At another day we shall lift the curtain on its fierce and bloody scenes.

THE

ATLANTIC MONTHLY.

A MAGAZINE OF LITERATURE, ART, AND POLITICS.

VOL. XII.—SEPTEMBER, 1863.—NO. LXXI.

THE PURITAN MINISTER.

It is nine o'clock upon a summer Sunday morning, in the year sixteen hundred and something. The sun looks down brightly on a little forest settlement, around whose expanding fields the great American wilderness recedes each day, withdrawing its bears and wolves and Indians into an ever remoter distance, — not yet so far but that a stout wooden gate at each end of the village street indicates that there is something outside which must stay outside, if possible. It would look very busy and thriving in this little place, to-day, but for the Sabbath stillness which broods over everything with almost an excess of calm. Even the smoke ascends more faintly than usual from the chimneys of these abundant log-huts and scanty framed houses, and since three o'clock yesterday afternoon not a stroke of this world's work has been done. Last night a preparatory lecture was held, and now comes the consummation of the whole week's life, in the solemn act of worship. In which settlement of the Massachusetts Colony is the great observance to pass before our eyes? If it be Cambridge village, the warning drum is beating its peaceful summons to the congregation. If it be Salem village, a bell is sounding its more ecclesiastic peal, and a red flag is simultaneously hung forth from the meeting-house, like the auction-flag of later periods, but offering in this case goods without money and beyond price. But if it be Haverhill village, then Abraham Tyler has been blowing his horn assiduously for half an hour, a service for which Abraham, each year, receives a half-pound of pork from every family in town.

Be it drum, bell, or horn, which gives the summons, we will draw near to this important building, the centre of the village, the one public edifice, — meeting-house, town-house, school-house, watch-house, all in one. So important is it, that no one can legally dwell more than a half-mile from it. And yet the people ride to meeting, short though the distance be, for at yonder oaken block a wife dismounts from behind her husband; — and has it not, moreover, been found needful to impose a fine of forty shillings on fast trotting to and fro? All sins

Entered according to Act of Congress, in the year 1863, by Ticknor and Fields, in the Clerk's Office of the District Court of the District of Massachusetts.

are not modern ones, young gentlemen.

We approach nearer still, and come among the civic institutions. This is the pillory, yonder the stocks, and there is a large wooden cage, a terror to evil-doers, but let us hope empty now. Round the meeting-house is a high wooden paling, to which the law permits citizens to tie their horses, provided it be not done too near the passage-way. For at that opening stands a sentry, clothed in a suit of armor which is painted black, and cost the town twenty-four shillings by the bill. He bears also a heavy matchlock musket; his rest, or iron fork, is stuck in the ground, ready to support the weapon; and he is girded with his bandoleer, or broad leather belt, which sustains a sword and a dozen tin cartridge-boxes.

The meeting-house is the second to which the town has treated itself, the first having been "a timber fort, both strong and comely, with flat roof and battlements," — a cannon on top, and the cannonade of the gospel down below. But this one cost the town sixty-three pounds, hard-earned pounds, and carefully expended. It is built of brick, smeared outside with clay, and finished with clay-boards, larger than our clapboards, outside of all. It is about twenty-five feet square, with a chimney half the width of the building, and projecting four feet above the thatched roof. The steeple is in the centre, and the bell-rope, if they have one, hangs in the middle of the broad aisle. There are six windows, two on each of the two sides, and two more at the end, part being covered with oiled paper only, part glazed in numerous small panes. And between the windows, on the outside, hang the heads of all the wolves that have been killed in the township within the year. But the Quakers think that the wolves have cheated the parish and got inside, in sheep's clothing.

The people are assembling. The Governor has passed by, with his four vergers bearing halberds before him. The French Popish ambassadors, who have just arrived from Canada, are told the customs of the place, and left to stay quietly in the Governor's house, with sweetmeats, wines, and the liberty of a private walk in the garden. The sexton has just called for the minister, as is his duty twice every Sunday, and, removing his cocked hat, he walks before his superior officer. The minister enters and passes up the aisle, dressed in Geneva cloak, black skull-cap, and black gloves open at thumb and finger, for the better handling of his manuscript. He looks round upon his congregation, a few hundred, recently *seated* anew for the year, arranged according to rank and age. There are the old men in the pews beneath the pulpit. There are the young men in the gallery, or near the door, with ruffs, showy belts, gold and silver buttons, "points" at the knees, and great boots. There are the young women, with "silk or tiffany hoods or scarfs," "embroidered or needle-worked caps," "immoderate great sleeves," "cut works," — a mystery, — "slash apparel," — another mystery, — "immoderate great vayles, long wings," etc., — mystery on mystery, but all recorded in the statutes, which forbid these splendors to persons of mean estate. There are the wives of the magistrates in prominent seats, and the grammar-school master's wife next them; and in each pew, close to the mother's elbow, is the little wooden cage for the youngest child, still too young to sit alone. All boys are held too young to sit alone also; for, though the emigrants left in Holland the aged deaconess who there presided, birch in hand, to control the rising generation in Sunday meetings, yet the urchins are now herded on the pulpit- and gallery-stairs, with four constables to guard them from the allurements of sin. And there sits Sin itself embodied in the shrinking form of some humiliated man or woman, placed on a high stool in the principal aisle, bearing the name of some dark crime written on paper and pinned to the garments, or perhaps a Scarlet Letter on the breast.

Oh, the silence of this place of worship, after the solemn service sets in! "People do not sneeze or cough here in public assemblies," says one writer, triumphantly, "so much as in England." The warning caution, "Be short," which the minister has inscribed above his study-door, claims no authority over his pulpit. He may pray his hour, unpausing, and no one thinks it long; for, indeed, at prayer-meetings four persons will sometimes pray an hour each, — one with confession, one with private petitions, a third with petitions for church and kingdom, and a fourth with thanksgiving, — neither part of the quartette being for an instant confused with the other. Then he may preach his hour, and, turning his hour-glass, may say, — but that he will not anticipate the levity to be born in a later century with Mather Byles, — "Now, my hearers, we will take another glass."

In short, this is the pomp and circumstance of glorious preaching. Woe to any one who shall disturb its proprieties! It is written in the statute, "If any one interrupt or oppose a preacher in season of worship, they shall be reproved by the magistrate, and on repetition shall pay £5, or stand two hours on a block four feet high, with this inscription in capitals, 'A Wanton Gospeller.'" Nor this alone, but the law stands by the minister's doctrine even out of the meeting-house. It is but a few days since Nathaniel Hadlock was sentenced to be severely whipped for declaring that he could receive no profit from Mr. H——'s preaching, — since Thomas Maule was mauled to the extent of ten stripes for declaring that Mr. H—— preached lies, and that his instruction was the doctrine of devils, — since even the wife of Nicholas Phelps was sentenced to pay five pounds or be whipped, for asserting that this same Mr. H—— sent abroad his wolves and bloodhounds among the sheep and lambs. Truly, it is a perilous thing to attend public worship in such reverential days. However, it is equally dangerous to stay at home; there are tithing-men to look after the absentees, and any one unnecessarily absent must pay five shillings. He may be put in the stocks or in the wooden cage, if delinquent for a month together.

But we must give our attention to the sermon. It is what the congregation will pronounce "a large, nervous, and golden discourse," a Scriptural discourse, — like the skeleton of the sea-serpent, all backbone and a great deal of that. It may be some very special and famous effort. Perhaps Increase Mather is preaching on "The Morning Star," or on "Snow," or on "The Voice of God in Stormy Winds"; or it may be his sermon entitled "Burnings Bewailed," to improve the lesson of some great conflagration, which he attributes partly to Sabbath-breaking and partly to the new fashion of monstrous periwigs. Or it may be Cotton Mather, his son, rolling forth his resounding discourse during a thunder-storm, entitled "Brantologia Sacra," — consisting of seven separate divisions or thunderbolts, and filled with sharp lightning from Scripture and the Rabbinical lore, and Cartesian natural philosophy. Just as he has proclaimed, "In the thunder there is the voice of the glorious God," a messenger comes hastening in, as in the Book of Job, to tell him that his own house has just been struck, and though no person is hurt, yet the house hath been much torn and filled with the lightnings. With what joy and power he instantly wields above his audience this providential surplus of excitement, reminding one irresistibly of some scientific lecturer who has nearly blown himself up by his own experiments, and proceeds beaming with fresh confidence, the full power of his compound being incontestably shown. Rising with the emergency, he tells them grandly, that, as he once had in his house a magnet which the thunder changed instantly from north to south, so it were well if the next bolt could change their stubborn souls from Satan to God. But afterward he is compelled to own that Satan also is sometimes permitted to have

a hand in the thunder, which is the reason why it breaks oftener on churches than on any other buildings; and again he admits, pensively, at last, that churches and ministers' houses have undoubtedly the larger share.

The sermon is over. The more demoralized among the little boys, whose sleepy eyes have been more than once admonished by the hare's-foot wand of the constables, — the sharp paw is used for the boys, the soft fur is kept for the smooth foreheads of drowsy maidens, — look up thoroughly awakened now. Bright eyes glance from beneath silk or tiffany hoods, for a little interlude is coming. Many things may happen in this pause after the sermon. Questions may be asked of the elders now, which the elders may answer, — if they can. Some lay brother may "exercise" on a text of Scripture, — rather severe exercise, it sometimes turns out. Candidates for the church may be proposed. A baptism may take place. If it be the proper month, the laws against profaning the Sabbath may be read. The last town-regulations may be read; or, far more exciting, a new marriage may be published. Or a darker scene may follow, and some offending magistrate may be required to stand upon a bench, in his worst garments, with a foul linen cap drawn close to his eyes, and acknowledge his sins before the pious people, who reverenced him so lately.

These things done, a deacon says impressively, "Brethren, now there is time for contribution; wherefore, as God hath prospered you, so freely offer." Then the people in the galleries come down and march two abreast, "up one ile and down the other," passing before the desk, where in a long "pue" sit the elders and deacons. One of these holds a money-box, into which the worshippers put their offerings, usually varying from one to five shillings, according to their ability and good-will. Some give paper pledges instead; and others give other valuables, such as "a fair gilt cup, with a cover," for the communion-service. Then comes a psalm, read, line after line, by some one appointed, out of the "Bay Psalm-Book," and sung by the people. These psalms are sung regularly through, four every Sunday, and some ten tunes compose the whole vocal range of the congregation. Then come the words, "Blessed are they who hear the word of the Lord and keep it," and then the benediction.

And then the reverend divine descends from his desk and walks down the aisle, bowing gravely right and left to his people, not one of whom stirs till the minister has gone out; and then the assembly disperses, each to his own home, unless it be some who have come from a distance, and stay to eat their cold pork and peas in the meeting-house.

Roll aside the panorama of the three-hours' Sunday service of two centuries ago, lest that which was not called wearisome in the passing prove wearisome in the delineation now. It needed all this accumulation of small details to show how widely the externals of New-England church-going have changed since those early days. But what must have been the daily life of that Puritan minister for whom this exhausting service was but one portion of the task of life! Truly, they were "pious and painful preachers" then, as I have read upon a stone in the old Watertown graveyard; — "princely preachers" Cotton Mather calls them. He relates that Mr. Cotton, in addition to preaching on Sunday and holding his ordinary lecture every Thursday, preached thrice a week besides, on Wednesday and Thursday early in the morning, and on Saturday afternoon. He also held a daily lecture in his house, which was at last abandoned as being too much thronged, and frequent occasional days occurred, when he would spend six hours "in the word and in prayer." On his voyage to this country, he being accompanied by two other ministers, they commonly had three sermons a day, — one after every meal. He was "an universal scholar and a walking library," — he studied twelve hours a day,

and said he liked to sweeten his mouth with a piece of Calvin before he went to sleep.

A fearful rate of labor; a strange, grave, quaint, ascetic, rigorous life. It seems a mystery how the Reverend Joshua Moody could have survived to write four thousand sermons, but it is no mystery why the Reverend John Mitchell was called "a truly aged young man" at thirty,—especially when we consider that he was successor at Cambridge to "the holy, heavenly, sweet-affecting, and soul-ravishing Mr. Shepard," in continuance of whose labors he kept a monthly lecture, "wherein he largely handled man's misery by sin and made a most entertaining exposition of the Book of Genesis."

For the minister's week-days were more arduous than his Sundays, and to have for each parish both pastor and teacher still left a formidable duty for each. He must visit families during several afternoons in every week, sending previous notice, so that children and domestics might be ready for catechizing. He was "much visited for counsel" in his own home, and must set apart one day in the week for cases of conscience, ranging from the most fine-drawn self-tormentings up to the most unnatural secret crimes. He must often go to lectures in neighboring towns, a kind of religious dissipation which increased so fast that the Legislature at last interfered to restrict it. He must have five or six separate seasons for private prayer daily, devoting each day in the week to special meditations and intercessions,—as Monday to his family, Tuesday to enemies, Wednesday to the churches, Thursday to other societies, Friday to persons afflicted, and Saturday to his own soul. He must have private fasts, spending whole days locked in his study and whole nights prostrate on the floor. Cotton Mather "thought himself starved," unless he fasted once a month at farthest, while he often did it twice in a week. Then there were public fasts quite frequently, "because of sins, blastings, mildews, drought, grasshoppers, caterpillars, small pox," "loss of cattle by cold and frowns of Providence." Perhaps a mouse and a snake had a battle in the neighborhood, and the minister must expound it as "symbolizing the conflict betwixt Satan and God's poor people," the latter being the mouse triumphant. Then if there were a military expedition, the minister might think it needful to accompany it. If there were even a muster, he must open and close it with prayer, or, in his absence, the captain must officiate instead.

One would naturally add to this record of labors the attendance on weddings and funerals. It is strange how few years are required to make a usage seem ancestral, or to reunite a traditional broken one. Who now remembers that our progenitors for more than a century disused religious services on both these solemn occasions? Magistrates alone could perform the marriage ceremony; though it was thought to be carrying the monopoly quite too far, when Governor Bellingham, in 1641, officiated at his own. Prayer was absolutely forbidden at funerals, as was done also by Calvin at Geneva, by John Knox in Scotland, by the English Puritans in the Westminster Assembly, and by the French Huguenots. The bell might ring, the friends might walk, two and two, to the grave; but there must be no prayer uttered. The secret was, that the traditions of the English and Romish Churches must be avoided at all sacrifices. "Doctor," said King James to a Puritan divine, "do you go barefoot because the Papists wear shoes and stockings?" Even the origin of the frequent New-England habit of eating salt fish on Saturday is supposed to have been the fact that Roman Catholics eat it on Friday.

But if there were no prayers said on these occasions, there were sermons. Mr. John Calf, of Newbury, described one specimen of funeral sermon in immortal verse:—

"On Sabbath day he went his way,
As he was used to do,
God's house unto, that they might know
What he had for to show;

God's holy will he must fulfil,
For it was his desire
For to declare a sermon rare
Concerning Madam Fryer."

The practice of wedding discourses was handed down into the last century, and sometimes beguiled the persons concerned into rather startling levities. For instance, when Parson Smith's daughter Mary was to marry young Mr. Cranch, —(what graceful productions of pen and pencil have come to this generation from the posterity of that union!)—the father permitted the saintly maiden to decide on her own text for the sermon, and she meekly selected, "Mary hath chosen the better part, which shall not be taken away from her," and the discourse was duly pronounced. But when her wild young sister Abby was bent on marrying a certain Squire Adams, called John, whom her father disliked and would not even invite to dinner, she boldly suggested for *her* text, "John came, neither eating bread nor drinking wine, and ye say he hath a devil." But no sermon stands recorded under this prefix, though Abby lived to be the wife of one President of the United States and mother of another.

The Puritan minister had public duties also upon him. "New England being a country," said Cotton Mather, "whose interests are remarkably enwrapped in theological circumstances, ministers ought to interest themselves in politics." Indeed, for many years they virtually controlled the franchise, inasmuch as only male church-members could vote or hold office, at least in the Massachusetts Colony. Those malecontents who petitioned to enlarge the suffrage were fined and imprisoned in 1646, and even in 1664 the only amendment was by permitting non-church-members to vote on a formal certificate to their orthodoxy from the minister. The government they aimed at was not democracy, but theocracy: "God never did ordain democracy as a fit government," said Cotton. Accordingly, when Cotton and Ward framed their first code, Ward's portion was rejected by the colony as heathen, — that is, based on Greek and Roman models, not Mosaic, — and Cotton's was afterwards rebuked in England as "fanatical and absurd." But the government finally established was an ecclesiastical despotism, tempered by theological controversy.

In Connecticut it was first the custom, and then the order, lasting as late as 1708, that "the ministers of the gospel should preach a sermon, on the day appointed by law for the choice of civil rulers, proper for the direction of the town in the work before them." They wrote state-papers, went on embassies, and took the lead at town-meetings. At the exciting gubernatorial election in 1637, Rev. John Wilson, minister of the First Church in Boston, not satisfied with "taking the stump" for his candidate, took to a full-grown tree and harangued the people from among the boughs. Perhaps the tree may have been the Great Elm which still ornaments the Common; but one sees no chips of that other old block among its branches now.

One would expect that the effect of this predominant clerical influence would have been to make the aim of the Puritan codes lofty, their consistency unflinching, their range narrow, and their penalties severe, — and it certainly was so. Looking at their educational provisions, they seem all noble; looking at their schedule of sins and retributions, one wonders how any rational being could endure them for a day. Communities, like individuals, furnish virtues piecemeal. Roger Williams, with all his wise toleration, bequeathed to Rhode Island no such system of schools as his persecutors framed for Massachusetts. But the children who were watched and trained thus carefully might be put to death, if they "cursed their orderly parents" after the age of sixteen; — not that the penalty ever was inflicted, but it was on the statute-book. Sabbath-breaking was placed on a level with murder, — though Calvin himself allowed the old men to play at bowls and the young men to practise military train-

ing, after afternoon service, at Geneva. Down to 1769 not even a funeral could take place on Sunday in Massachusetts, without license from a magistrate. Then the stocks and the wooden cage were in frequent use, though "barbarous and cruel" punishments were forbidden in 1641. Scolds and railers were set on a ducking-stool and dipped over head and ears three times, in running water, if possible. Mrs. Oliver, a troublesome theologian, was silenced with a cleft stick applied to her tongue. Thomas Scott, in 1649, was sentenced for some offence to learn "the chatachise," or be fined ten shillings, and, after due consideration, paid the fine. Sometimes offenders, with a refinement of cruelty, were obliged to "go and talk to the elders." And if any youth made matrimonial overtures to a young female without the consent of her parents, or, in their absence, of the County Court, he was first fined and then imprisoned. A new etymology for the word "courting."

An exhibition of this mingled influence was in the relation of the ministers to the Indian wars. Roger Williams, even when banished and powerless, could keep the peace with the natives. But when the brave Miantonimo was to be dealt with for suspected treason, and the civil authorities decided, that, though it was unsafe to set him at liberty, they yet had no ground to put him to death, the matter being finally referred to five "elders," Uncas was straightway authorized to slay him in cold blood. The Pequots were first defeated and then exterminated, and their heroic King Philip, a patriot according to his own standard, was hunted like a wild beast, his body quartered and set on poles, his head exposed as a trophy for twenty years on a gibbet in Plymouth, and one of his hands sent to Boston: then the ministers returned thanks, and one said that they had *prayed* the bullet into Philip's heart. Nay, it seems that in 1677, on a Sunday in Marblehead, "the women, as they came out of the meeting-house, fell upon two Indians, that had been brought in as captives, and in a tumultuous way very barbarously murdered them," in revenge for the death of some fishermen: a moral application which certainly gives a singular impression of the style of gospel prevailing inside the meeting-house that day. But it is good to know, on the other side, that, when the Commissioners of the United Colonies had declared an Indian war, and the Massachusetts Colony had become afterwards convinced that the war was unrighteous, the troops were recalled, though already far towards the field, and no pride or policy prevented the order from being rescinded.

These were some of the labors of the clergy. But no human being lives without relaxation, and they may have had theirs. True, "ministers have little to joy in in this world," wrote old Norton; and one would think so, to read the dismal diaries, printed or manuscript, of those days. "I can compare with any man living for fears," said Hooker. "I have sinned myself into darkness," said Bailey. "Many times have I been ready to lay down my ministry, thinking God had forsaken me." "I was almost in the suburbs of hell all day." Yet who can say that this habit of agonizing introspection wholly shut out the trivial enjoyments of daily life? Who drank, for instance, that twelve gallons of sack and that six gallons of white wine which the General Court thought it convenient that the Auditor should send, "as a small testimony of the Court's respect, to the reverend assembly of Elders at Cambridge," in 1644? Did the famous Cambridge Platform rest, like the earth in the Hebrew cosmology, upon the waters,—strong waters? Was it only the Derry Presbyterians who would never give up a p'int of doctrine nor a pint of rum? It is startling to remember that in 1685 it was voted, on occasion of a public funeral, that "some person be appointed to look after the burning of the wine and the heating of the cider," and to hear that on this occasion there were thirty-two gallons of wine and still more of cider, with one hundred and four pounds of

that ensnaring accessory, sugar. Francis Higginson, in writing back to the mother country that one sup of New England's air was better than a whole draught of Old England's ale, gave convincing proof that he had tasted both beverages. But, after all, the very relaxations of the Puritan minister were more spiritual than spirituous, and to send forth a good Nineteenthly from his own lips was more relishing than to have the best Double X go in.

In spite of the dignity of this influential class, they were called only Elders for a long time. Titles were carefully adjusted in those days. The commonalty bore the appellations of Goodman and Goodwife, and one of Roger Williams's offences was his wishing to limit these terms to those who gave some signs of deserving them. The name "Mr." was allowed to those who had taken the degree of Master of Arts at College, and also to professional men, eminent merchants, military officers, and mates of vessels, and their wives and daughters monopolized the epithet "Mrs." Mr. Josiah Plastow, when he had stolen four baskets of corn from the Indians, was degraded into plain Josiah. "Mr." seems to have meant simply "My Sir," and the clergy were often called "Sir" merely, a title given also to college graduates, on Commencement programmes, down to the time of the Revolution. And so strong was the Puritan dislike to the idolatry of saints' names, that the Christian Apostles were sometimes designated as Sir Paul, Sir Peter, and Sir James.

In coming to the private affairs of the Puritan divines, it is humiliating to find that anxieties about salary are of no modern origin. The highest compensation I can find recorded is that of John Higginson in 1671, who had £160 voted him "in country produce," which he was glad, however, to exchange for £120 in solid cash. Solid cash included beaver-skins, black and white wampum, beads, and musket-balls, value one farthing. Mr. Woodbridge in Newbury at this same time had £60, and Mr. Epes preached in Salem for twenty shillings a Sunday, half in money and half in provisions. Holy Mr. Cotton used to say that nothing was cheap in New England but milk and ministers. Down to 1700, Increase Mather says, most salaries were less than £100, which he thinks "might account for the scanty harvests enjoyed by our farmers." He and his son Cotton both tell the story of a town where "two very eminent ministers were only allowed £30 per annum" and "the God who will not be mocked made them lose £300 worth of cattle that year." The latter also complains that the people were very willing to consider the ministers the stars, rather than the mere lamps, of the churches, provided they, like the stars, would shine without earthly contributions.

He also calls the terms of payment, in one of his long words, "Synecdotical Pay,"—in allusion to that rhetorical figure by which a part is used for the whole. And apparently various causes might produce this Synecdoche. For I have seen an anonymous "Plea for Ministers of the Gospel," in 1706, which complains that "young ministers have often occasion in their preaching to speak things offensive to some of the wealthiest people in town, on which occasion they may withhold a considerable part of their maintenance." It is a comfort to think how entirely this source of discomfort, at least, is now eradicated from the path of the clergy; and it is painful to think that there ever was a period when wealthy parishioners did not enjoy the delineation of their own sins.

However, the ministerial households contrived to subsist, in spite of rhetorical tropes and malecontent millionnaires. The Puritan divine could commonly afford not only to keep house, but to keep horse likewise, and to enjoy the pet professional felicity of printing his own sermons. As to the last privilege there could have been no great trouble, for booksellers were growing rich in New England as early as 1677,—not that it is always an inevitable inference that authors are,—and Cotton Mather published

three hundred and eighty-two different works for his own share. Books were abundant enough at that day, though somewhat grim and dingy, and two complete Puritan libraries are preserved in the rich collection of the American Antiquarian Society at Worcester, — without whose treasures, let me add, this modest monograph never could have been written. As for the minister's horse, the moral sentiment of the community protected him faithfully; for a man was fined in Newbury for "killing our elder's mare, and a special good beast she was." The minister's house was built by the town; in Salem it was "13 feet stud, 23 by 42, four chimnies and no gable-ends," — so that the House with Seven Gables belonged to somebody else; — and the Selectmen ordered all men to appear with teams on a certain day and put the minister's grounds in order.

Inside the parsonage-house, however, there was sometimes trouble. Rev. Ezekiel Rogers wrote in 1657 to his brother in England,—"Much ado I have with my own family; hard to get a servant who enjoys catechising or family duties. I had a rare blessing of servants in England, and those I brought over were a blessing; but the young brood doth much afflict me." Probably the minister's wife had the worst of this; but she seems to have been generally, like the modern minister's wife, a saint, and could bear it. Cotton Mather, indeed, quotes triumphantly the Jewish phrase for a model female, — "one who deserved to marry a priest"; and one of the most singular passages in the history of the human heart is the old gentleman's own narrative, in his manuscript diary, of a passionate love-adventure, in his later years, with a fascinating young girl, an "ingenious child," as he calls her, whom his parish thought by no means a model female, but from whom it took three days of solitary fasting and prayer to wean him at last.

He was not the only Puritan minister who bestowed his heart somewhat strangely. Rev. John Mitchell, who succeeded the soul-ravishing Shepard at Cambridge, as aforesaid, married his predecessor's widow "on the general recommendation of her," and the college students were greatly delighted, as one might imagine. Rev. Michael Wigglesworth, in 1691, wooed the Widow Avery in a written discourse, which I have seen in manuscript, arranged under twelve different heads,— one of which treats of the prospect of his valuable life being preserved longer by her care. She having children of her own, he offers mysteriously to put some of his own children "out of the way," if necessary, — a hint which becomes formidable when one remembers that he was the author of that once famous theological poem, "The Day of Doom," in which he relentingly assigned to infants, because they had sinned only in Adam, "the easiest room in hell." But he wedded the lady, and they were apparently as happy as if he had not been a theologian; and I have seen the quaint little heart-shaped locket he gave her, bearing an anchor and a winged heart and "Thine forever."

Let us glance now at some of the larger crosses of the Puritan minister. First came a "young brood" of heretics to torment him. Gorton's followers were exasperating enough; they had to be confined in irons separately, one in each town, on pain of death, if they preached their doctrines, — and of course they preached them. But their offences and penalties were light, compared with those of the Quakers. When the Quakers assembled by themselves, their private doors might be broken open, — a thing which Lord Chatham said the king of England could not do to any one,— they might be arrested without warrant, tried without jury, for the first offence be fined, for the second lose one ear, for the third lose the other ear, and for the fourth be bored with red-hot iron through the tongue,—though this last penalty remained a dead letter. They could be stripped to the waist, tied to a cart, and whipped through town after town, — three women were whipped through eleven towns, eighty miles, — but afterwards the num-

ber was limited to three. Their testimony was invalid, their families attainted, and those who harbored them were fined forty shillings an hour. They might be turned out shelterless among wolves and bears and frosts; they could be branded H for Heretic, and R for Rogue; they could be sold as slaves; and their graves must not be fenced to keep off wild beasts, lest their poor afflicted bodies should find rest there.

Yet in this same age female Quakers had gone as missionaries to Malta and to Turkey and returned unharmed. No doubt the monks and the Sultan must have looked on the plain dress much as some clerical gentlemen have since regarded the Bloomer costume, — and the Inquisition imprisoned the missionaries, though the Sultan did not. But meanwhile the Quaker women in New England might be walking to execution with their male companions, — like Mary Dyer in Boston, — under an armed guard of two hundred, led on by a minister seventy years old, and the fiercer for every year. When they asked Mary Dyer, "Are you not ashamed to walk thus hand in hand between two young men?" she answered, "No, this is to me an hour of the greatest joy I could enjoy in this world. No tongue could utter and no heart understand the sweet influence of the Spirit which now I feel." Then they placed her on the scaffold, and covered her face with a handkerchief which the Reverend Mr. Wilson lent the hangman; and when they heard that she was reprieved, she would not come down, saying that she would suffer with her brethren. And suffer death she did, at last, and the Reverend Mr. Wilson made a pious ballad on her execution.

It is no wonder, if some persons declare that about this time the wheat of Massachusetts began to be generally blasted, and the peas to grow wormy. It is no wonder, that, when the witchcraft excitement came on, the Quakers called it a retribution for these things. But let us be just, even to the unjust. Toleration was a new-born virtue in those days, and one which no Puritan ever for a moment recognized as such, or asked to have exercised toward himself. In England they did not wish to be tolerated for a day as sectaries, they claimed to have authority as the one true church. They held with Pym, that "it is the duty of legislators to establish the true religion and to punish false," — a doctrine equally fatal, whether applied to enforce the right theology or the wrong. They objected to the Church of England, not that it persecuted, but that its persecution was wrongly aimed. It is, therefore, equally absurd to praise them for a toleration they never professed, or to accuse them of any inconsistency when they practised intolerance. They have been so loosely praised, that they are as loosely blamed. What was great in them was their heroism of soul, not their largeness. They sought the American wilderness not to indulge the whims of others, but their own. They said to the Quakers, "We seek not your death, but your absence." All their persecution, after all, was an alternative sentence; all they asked of the Quakers was to keep out of their settlements and let them alone. Moreover, their worst penalties were borrowed from the English laws, and only four offenders were put to death from the beginning; — of course, four too many.

Again, it is to be remembered that the Quaker peculiarities were not theological only, but political and social also. Everything that the Puritan system of government asserted the Quakers denied; they rendered no allegiance, owned no laws, paid no taxes, bore no arms. With the best possible intentions, they subverted all established order. Then their modes of action were very often intemperate and violent. One can hardly approve the condemnation pronounced by Cotton Mather upon a certain Rarey among the Friends in those days, who could control a mad bull that would rend any other man. But it was oftener the Quakers who needed the Rareys. Running naked through the public streets, — coming into meeting dressed in sackcloth, with ashes

on their heads and nothing on their feet, — or sitting there with their hats on, groaning and rocking to and fro, in spite of elders, deacons, and tithing-men: these were the vagaries of the zealots, though always repudiated by the main body. The Puritans found themselves reproached with permitting these things, and so took refuge in outrageous persecutions, which doubled them. Indeed, the Quakers themselves began to persecute, on no greater provocation, in Philadelphia, thirty years afterwards,—playing over again upon George Keith and his followers the same deluded policy of fines and imprisonment from which they had just escaped; — as minorities have persecuted subminorities ever since intolerance began.

Indeed, so far as mere language went, the minority always watched the majority. Grave divines did not like to be pelted with such epithets as these: "Thou fiery fighter and green-headed trumpeter! thou hedgehog and grinning dog! thou mole! thou tinker! thou lizard! thou bell of no metal but the tone of a kettle! thou wheelbarrow! thou whirlpool! thou whirligig! thou firebrand! thou moon-calf! thou ragged tatterdemalion! thou gormandizing priest! thou bane of reason and beast of the earth! thou best to be spared of all mankind!" — all of which are genuine epithets from the Quaker books of that period, and termed by Cotton Mather, who collected them, "quills of the porcupine." They surpass even Dr. Chauncy's catalogue of the unsavory epithets used by Whitefield and Tennent a century later; and it was not likely that they would be tolerated by a race whose reverence for men in authority was so comprehensive that they actually fined some one for remarking that Major Phillips's old mare was as lean as an Indian's dog.

There is a quaint anecdote preserved, showing the continuance of the Quaker feud in full vigor as lately as 1705. A youth among the Friends wished to espouse a fair Puritan maiden; but the Quakers disapproved his marrying out of their society, and the Congregationalists his marrying into theirs; so in despair he thus addressed her: — "Ruth, let us break from this unreasonable bondage. I will give up my religion, and thou shalt give up thine; and we will marry and go into the Church of England, and go to the Devil together." And they fulfilled the resolution, the Puritan historian says, *so far* as going into the Church, and marrying, and staying there for life. But probably the ministers thought it to be another case of synecdoche.

With the same careful discrimination we must try to study the astonishing part played by the ministers in the witchcraft delusions. It must be remembered that the belief in this visitation was no new or peculiar thing in New England. The Church, the Scriptures, the mediæval laws, had all made it a capital crime. There had been laws against it in England for a hundred years. Bishop Jewel had complained to Queen Elizabeth of the alarming increase of witches and sorcerers. Sir Thomas Browne had pronounced it flat atheism to doubt them High legal and judicial authorities, as Dalton, Keeble, Sir Matthew Hale, had described this crime as definitely and seriously as any other. In Scotland four thousand had suffered death for it in ten years; Cologne, Nuremberg, Geneva, Paris, were executing hundreds every year; even in 1749 a girl was burnt alive in Würtzburg; and is it strange, if, during all that wild excitement, Massachusetts put to death twenty? The only wonder is in the independence of the Rhode Island people, who declared that "there were no witches on the earth, nor devils, — except" (as they profanely added) "the New-England ministers, and such as they."

John Higginson sums it up best: — "They proceeded in their integrity with a zeal of God against sin, according to their best light and law and evidence." "*But there is a question*," he wisely adds, "whether some of the laws, customs, and privileges used by judges and juries in England, which were followed as pat-

terns here, were not insufficient." Cotton Mather also declared that he observed in judges and juries a conscientious endeavor to do the thing which was right, and gives a long list of the legal authorities whom they consulted; observing, finally, that the fact of fifty confessions was, after all, the one irresistible vindication of their strong measures.

It must have been so. Common sense and humanity might have refuted every other evidence than that of the victims themselves. But what were the authorities to do, when, in addition to all legal and Scriptural precedents, the prisoners insisted on entering a plea of guilty? When Goody E—— testified that she and two others rode from Andover to a witch-meeting on a broomstick, and the stick broke and she fell and was still lame from it, — when her daughter testified that she rode on the same stick, and confirmed all the details of the casualty, — when the grand-daughter confirmed them also, and added, that she rode on another stick, and they all signed Satan's book together, — when W. B——, aged forty, testified that Satan assembled a hundred fine blades near Salem Meeting-House, and the trumpet sounded, and bread and wine were carried round, and Satan was like a black sheep, and wished them to destroy the minister's house, (by thunder probably,) and set up his kingdom, and "then all would be well," — when one woman summoned her three children and some neighbors and a sister and a domestic, who all testified that she was a witch and so were they all,—what could be done for such prisoners by judge or jury, in an age which held witchcraft a certainty? It was only the rapid rate of increase which finally stopped the convictions.

One thing is certain, that this strange delusion, a semi-comedy to us, — though part of the phenomena may find their solution in laws not yet unfolded, — was the sternest of tragedies to those who lived in it. Conceive, for an instant, of believing in the visible presence and labors of the arch-fiend in a peaceful community. Yet from the bottom of their souls these strong men held to it, and they waged a hand-to-hand fight with Satan all their days. Very inconveniently the opponent sometimes dealt his blows, withal. Surely it could not be a pleasant thing to a sound divine, just launched upon his seventeen-headed discourse, to have a girl with wild eyes and her hair about her ears start up and exclaim, "Parson, your text is too long," — or worse yet, "Parson, your sermon is too long," — or most embarrassing of all, "There 's a great yellow bird sitting on the parson's hat in the pulpit." But these formidable interruptions veritably happened, and received the stern discipline in such cases made and provided.

But beside Quakers and witches, the ministers had other female tormentors to deal with. There was the perpetual anxiety of the unregenerated toilet. "Immodest apparel, laying out of hair, borders, naked necks and arms, or, as it were, pinioned with superfluous ribbons," —these were the things which tried men's souls in those days, and the statute-books and private journals are full of such plaintive inventories of the implements of sin. Things known as "slash apparel" seem to have been an infinite source of anxiety; there must be only one slash on each sleeve and one in the back. Men also must be prohibited from shoulder-bands of undue width, double ruffs and cuffs, and "immoderate great breeches." Part of the solicitude was for modesty, part for gravity, part for economy: none must dress above their condition. In 1652, three men and a woman were fined ten shillings each and costs for wearing silver-lace, another for broad bone-lace, another for tiffany, and another for a silk hood. Alice Flynt was accused of a silk hood, but, proving herself worth more than two hundred pounds, escaped unpunished. Jonas Fairbanks, about the same time, was charged with "great boots," and the evidence went hard against him; but he was fortunately acquitted, and the credit of the family saved.

The question of veils seems to have

rocked the Massachusetts Colony to its foundations, and was fully discussed at Thursday Lecture, March 7th, 1634. Holy Mr. Cotton was utterly and unalterably opposed to veils, regarding them as a token of submission to husbands in an unscriptural degree. It is pleasant to think that there could be an unscriptural extent of such submission, in those times. But Governor Endicott and Rev. Mr. Williams resisted stoutly, quoting Paul, as usual in such cases; so Paul, veils, and vanity carried the day. But afterward Mr. Cotton came to Salem to preach for Mr. Skelton, and did not miss his chance to put in his solemn protest against veils; he said they were a custom not to be tolerated; and so the ladies all came to meeting without their veils in the afternoon. Probably the most astounding visible result from a single sermon within the memory of man.

Beginning with the veils, the eye of authority was next turned on what was under them. In 1675 it was decided, that, as the Indians had done much harm of late, and the Deity was evidently displeased with something, the General Court should publish a list of the evils of the time. And among the twelve items of contrition stood this: "Long hair like women's hair is worn by some men, either their own or others' hair made into periwigs;—and by some women wearing borders of hair, and their cutting, curling, and immodest laying out of their hair," (does this hint at puff-combs?) "which practice doth increase, especially among the younger sort." Not much was effected, however,—"divers of the elders' wives," as Winthrop lets out, "being in some measure partners in this disorder." The use of wigs also, at first denounced by the clergy, was at last countenanced by them: in portraits later than 1700 they usually replace the black skull-cap of earlier pictures, and in 1752 the tables had so far turned that a church-member in Newbury refused communion because "the pastor wears a wigg." Yet Increase Mather thought they played no small part in producing the Boston Fire. "Monstrous Periwigs, such as some of our church-members indulge in, which make them resemble the Locusts that came out of ye Bottomless Pit. Rev. ix. 7, 8,—and as an eminent Divine calls them, *Horrid Bushes of Vanity;* such strange apparel as is contrary to the light of Nature and to express Scripture. 1 Cor. xi. 14, 15. Such pride is enough to provoke the Lord to kindle fires in all the towns in the country."

Another vexation was the occasional arrival of false prophets in a community where every man was expected to have a current supply of religious experiences always ready for circulation. There was a certain hypocritical Dick Swayn, for instance, a seafaring man, who gave much trouble; and E. F., — for they mostly appear by initials, — who, coming to New Haven one Saturday evening, and being dressed in black, was taken for a minister, and asked to preach: he was apparently a little insane, and at first talked "demurely," but at last "railed like Rabshakeh," Cotton Mather says. There was also M. J., a Welsh tanner, who finally stole his employer's leather breeches and set up for a preacher, — less innocently apparelled than George Fox. But the worst of all was one bearing the since sainted name of Samuel May. This vessel of wrath appeared in 1699, indorsed as a man of a sweet gospel spirit, — though, indeed, one of his indorsers had himself been "a scandalous fire-ship among the churches." Mather declares that every one went a-Maying after this man, whom he maintains to have been a barber previously, and who knew no Latin, Greek, Hebrew, nor even English, — for (as he indignantly asserts) "there were eighteen horrid false spells, and not one point, in one very short note I received from him." This doubtful personage copied his sermons from a volume by his namesake, Dr. Samuel Bolton, — "Sam the Doctor and Sam the Dunce," Mather calls them. Finally, "this eminent worthy stranger," Sam, who was no dunce, after all, quarrelled

with his parish for their slow payments, and "flew out like a Dragon, spitting this among other fire at them: — 'I see, no longer pipe, no longer dance,'—so that they came to fear he was a cheat, and wish they had never seen him." Then "the guilty fellow, having bubbled the silly neighbors of an incredible number of pounds, on a sudden was gone," and Cotton Mather sent a letter after him, which he declares to have been the worst penalty the man suffered.

It is safer to say little of the theological scheme of the Puritan ministers, lest the present writer be pronounced a Wanton Gospeller, and have no tithingman to take his part. But however it may be with the regular standards of theology of that period, every one could find a sufficient variety to suit him among its heresies. Eighty-two "pestilent heresies" were counted as having already sprung up in 1637; others say one hundred and six; others, two hundred and ten. The Puritans kept Rhode Island for what housekeepers call an "odd drawer," into which to crowd all these eccentricities. It was said, that, if any man happened to lose his religious opinion, he might be sure to find it again at some village in Rhode Island. Thither went Roger Williams and his Baptists; thither went Quakers and Ranters; thither went Ann Hutchinson, that extraordinary woman, who divided the whole politics of the country by her Antinomian doctrines, denouncing the formalisms around her, and converting the strongest men, like Cotton and Vane, to her opinions. Thither went also Samuel Gorton, a man of no ordinary power, who proclaimed a mystical union with God in love, thought that heaven and hell were in the mind alone, but esteemed little the clergy and the ordinances. The colony was protected also by the thoughtful and chivalrous Vane, who held that water baptism had had its day, and that the Jewish Sabbath should give place to the modern Sunday. All these, and such as these, were called generally "Seekers" by the Puritans, — who claimed for themselves that they had found that which they sought. It is the old distinction; but for which is the ship built, to be afloat or to be at anchor?

Such were those pious worthies, the men whose names are identified with the leadership of the New-England colonies, — Cotton, Hooker, Norton, Shepard, the Higginsons, the Mathers. To these might be added many an obscurer name, preserved in the quaint epitaphs of the "Magnalia": — Blackman, "in spite of his name, a Nazarene whiter than snow"; — Partridge, "a hunted partridge," yet "both a dove and an eagle"; — Ezekiel Rogers, "a tree of knowledge, whose apples the very children might pluck"; — Nathaniel Rogers, "a very lively preacher and a very preaching liver, he loved his church as if it had been his family and he taught his family as if it had been his church"; — Warham, the first who preached with notes, and who suffered agonies of doubt respecting the Lord's Supper; — Stone, "both a loadstone and a flint stone," and who set the self-sacrificing example of preaching only one hour.

These men had mingled traits of good and evil, like all mankind, — nobler than their descendants in some attributes, less noble in others. The most strait-laced Massachusetts Calvinist of these days would have been disciplined by them for insufferable laxity, and yet their modern successor would count it utter shame, perhaps, to own a slave in his family or to drink rum-punch at an ordination, — which Puritan divines might do without rebuke. Not one of them has left on record a statement so broad and noble as that of Roger Williams: — "To be content with food and raiment, — to mind, not our own, but every man the things of another, — yea, and to suffer wrong, and to part with what we judge to be right, yea, our own lives, and, as poor women martyrs have said, as many as there be hairs upon our heads, for the name of God and for the Son of God's sake, — this is humanity, this is Christianity; the

rest is but formality and picture-courteous idolatry, and Jewish and Popish blasphemy against the Christian religion." And yet the mind of Roger Williams was impulsive, erratic, and unstable, compared with theirs; and in what respect has the work they left behind them proved, after the testing of two centuries, less solid or durable than his?

These men were stern even to cruelty against all that they held evil, — Satan and his supposed emissaries, witches, Quakers, Indians, negligent parishioners, disobedient offspring, men with periwigs, and women in slash apparel. Yet the tenderest private gentleness often lay behind this gloomy rigor of the conscience. Some of them would never chastise a son or daughter, in spite of Solomon; others would write in Greek characters in their old almanacs quaint little English verses on the death of some beloved child. That identical "Priest Wilson" who made the ballad at Mary Dyer's execution attended a military muster one day. "Sir," said some one, "I 'll tell you a great thing: here 's a mighty body of people, and there 's not seven of them all but loves Mr. Wilson." "Sir," it was replied, "I 'll tell you as good a thing: here 's a mighty body of people, and there 's not one of them all but Mr. Wilson loves him." Mr. Cotton was a terror to evil-doers, yet, when a company of men came along from a tavern and said, "Let us put a trick upon Old Cotton," and one came and cried in his ear, "Cotton, thou art an old fool," — "I know it, I know it," retorted cheerily the venerable man, and pungently added, "The Lord make both me and thee wiser!" Mr. Hooker was once reproving a boy in the street, who boldly replied, "I see you are in a passion; I will not answer you," and so ran away. It contradicts all one's notions of Puritan propriety, and yet it seems that the good man, finding afterwards that the boy was not really guilty, sent for him to apologize, and owned himself to have been wrong.

What need to speak of the strength and courage, the disinterestedness and zeal, with which they bore up the fortunes of the colony on their shoulders, and put that iron into the New-England blood which has since supplied the tonic for a continent? It was said of Mr. Hooker, that he was "a person who, while doing his Master's work, would put a king in his pocket"; and it was so with them all: they would pocket anything but a bribe to themselves or an insult to God or their profession. They flinched from no reproof that was needed: "Sharp rebukes make sound Christians" was a proverb among them. They sometimes lost their tempers, and sometimes their parishes, but never their independence. I find a hundred anecdotes of conscientious cruelty laid up against them, but not one of cowardice or of compromise. They may have bored the tongues of others with a bar of iron, but they never fettered their own tongues with a bar of gold, — as some African tribes think it a saintly thing to do, and not African tribes alone.

There was such an absolute righteousness among them, that to this day every man of New-England descent lives partly on the fund of virtuous habit they accumulated. And, on the other hand, every man of the many who still stand ready to indorse everything signed by a D. D.—without even adding the commercial E. E., for Errors Excepted — is in part the victim of the over-influence they obtained. Yet there was a kind of democracy in that vast influence also: the Puritans were far more thorough Congregationalists than their successors; they recognized no separate clerical class, and the "elder" was only the highest officer of his own church. Each religious society could choose and ordain its own minister, or dispense with all ordaining services at will, without the slightest aid or hindrance from council or consociation. So the stern theology of the pulpit only reflected the stern theology of the pews; the minister was but the representative man. If the ministers were

recognized as spiritual guides, it was because they were such to the men of their time, whatever they might be to ours. Demonax of old, when asked about the priests' money, said, that, if they were really the leaders of the people, they could not have too much payment, — or too little, if they were not. I believe that on these conditions the Puritan ministers well earned their hundred and sixty pounds a year, with a discount of forty pounds, if paid in wampum-beads, beaver-skins, and musket-balls. What they took in musket-balls they paid back in the heavier ammunition of moral truth. Here is a specimen of their grape-shot: —

"My fathers and brethren," said John Higginson, "this is never to be forgotten, that our New England is originally a plantation of religion, and not a plantation of trade. Let merchants and such as are making cent. per cent. remember this. Let others who have come over since at sundry times remember this, that worldly gain was not the end and design of the people of New England, but religion. And if any man among us make religion as twelve and the world as thirteen, let such a man know he hath neither the spirit of a true New-England man, nor yet of a sincere Christian."

THOREAU'S FLUTE.

We, sighing, said, "Our Pan is dead;
His pipe hangs mute beside the river; —
Around it wistful sunbeams quiver,
But Music's airy voice is fled.
Spring mourns as for untimely frost;
The bluebird chants a requiem;
The willow-blossom waits for him; —
The Genius of the wood is lost."

Then from the flute, untouched by hands,
There came a low, harmonious breath:
"For such as he there is no death; —
His life the eternal life commands;
Above man's aims his nature rose:
The wisdom of a just content
Made one small spot a continent,
And tuned to poetry Life's prose.

"Haunting the hills, the stream, the wild,
Swallow and aster, lake and pine,
To him grew human or divine, —
Fit mates for this large-hearted child.
Such homage Nature ne'er forgets,
And yearly on the coverlid
'Neath which her darling lieth hid
Will write his name in violets.

THE

ATLANTIC MONTHLY.

A MAGAZINE OF LITERATURE, ART, AND POLITICS.

VOL. XII.—DECEMBER, 1863.—NO. LXXIV.

THE MAN WITHOUT A COUNTRY.

I SUPPOSE that very few casual readers of the "New York Herald" of August 13th observed, in an obscure corner, among the "Deaths," the announcement,

"NOLAN. DIED, on board U. S. Corvette Levant, Lat. 2° 11′ S., Long. 131° W., on the 11th of May, PHILIP NOLAN."

I happened to observe it, because I was stranded at the old Mission-House in Mackinac, waiting for a Lake-Superior steamer which did not choose to come, and I was devouring, to the very stubble, all the current literature I could get hold of, even down to the deaths and marriages in the "Herald." My memory for names and people is good, and the reader will see, as he goes on, that I had reason enough to remember Philip Nolan. There are hundreds of readers who would have paused at that announcement, if the officer of the Levant who reported it had chosen to make it thus:—"Died, May 11th, THE MAN WITHOUT A COUNTRY." For it was as "The Man without a Country" that poor Philip Nolan had generally been known by the officers who had him in charge during some fifty years, as, indeed, by all the men who sailed under them. I dare say there is many a man who has taken wine with him once a fortnight, in a three years' cruise, who never knew that his name was "Nolan," or whether the poor wretch had any name at all.

There can now be no possible harm in telling this poor creature's story. Reason enough there has been till now, ever since Madison's Administration went out in 1817, for very strict secrecy, the secrecy of honor itself, among the gentlemen of the navy who have had Nolan in successive charge. And certainly it speaks well for the *esprit de corps* of the profession and the personal honor of its members, that to the press this man's story has been wholly unknown,—and, I think, to the country at large also. I have reason to think, from some investigations I made in the Naval Archives when I was attached to the Bureau of Construction, that every official report relating to him was burned when Ross burned the public buildings at Washington. One of the Tuckers, or possibly one of the Watsons, had Nolan in charge at

Entered according to Act of Congress, in the year 1863, by TICKNOR AND FIELDS, in the Clerk's Office of the District Court of the District of Massachusetts.

the end of the war; and when, on returning from his cruise, he reported at Washington to one of the Crowninshields, — who was in the Navy Department when he came home, — he found that the Department ignored the whole business. Whether they really knew nothing about it, or whether it was a "*Non mi ricordo,*" determined on as a piece of policy, I do not know. But this I do know, that since 1817, and possibly before, no naval officer has mentioned Nolan in his report of a cruise.

But, as I say, there is no need for secrecy any longer. And now the poor creature is dead, it seems to me worth while to tell a little of his story, by way of showing young Americans of to-day what it is to be

A MAN WITHOUT A COUNTRY.

Philip Nolan was as fine a young officer as there was in the "Legion of the West," as the Western division of our army was then called. When Aaron Burr made his first dashing expedition down to New Orleans in 1805, at Fort Massac, or somewhere above on the river, he met, as the Devil would have it, this gay, dashing, bright young fellow, at some dinner-party, I think. Burr marked him, talked to him, walked with him, took him a day or two's voyage in his flat-boat, and, in short, fascinated him. For the next year, barrack-life was very tame to poor Nolan. He occasionally availed of the permission the great man had given him to write to him. Long, high-worded, stilted letters the poor boy wrote and rewrote and copied. But never a line did he have in reply from the gay deceiver. The other boys in the garrison sneered at him, because he sacrificed in this unrequited affection for a politician the time which they devoted to Monongahela, sledge, and high-low-jack. Bourbon, euchre, and poker were still unknown. But one day Nolan had his revenge. This time Burr came down the river, not as an attorney seeking a place for his office, but as a disguised conqueror. He had defeated I know not how many district-attorneys; he had dined at I know not how many public dinners; he had been heralded in I know not how many Weekly Arguses; and it was rumored that he had an army behind him and an empire before him. It was a great day — his arrival — to poor Nolan. Burr had not been at the fort an hour before he sent for him. That evening he asked Nolan to take him out in his skiff, to show him a canebrake or a cotton-wood tree, as he said, — really to seduce him; and by the time the sail was over, Nolan was enlisted body and soul. From that time, though he did not yet know it, he lived as A MAN WITHOUT A COUNTRY.

What Burr meant to do I know no more than you, dear reader. It is none of our business just now. Only, when the grand catastrophe came, and Jefferson and the House of Virginia of that day undertook to break on the wheel all the possible Clarences of the then House of York, by the great treason-trial at Richmond, some of the lesser fry in that distant Mississippi Valley, which was farther from us than Puget's Sound is to-day, introduced the like novelty on their provincial stage, and, to while away the monotony of the summer at Fort Adams, got up, for *spectacles*, a string of court-martials on the officers there. One and another of the colonels and majors were tried, and, to fill out the list, little Nolan, against whom, Heaven knows, there was evidence enough, — that he was sick of the service, had been willing to be false to it, and would have obeyed any order to march any-whither with any one who would follow him, had the order only been signed, "By command of His Exc. A. Burr." The courts dragged on. The big flies escaped, — rightly for all I know. Nolan was proved guilty enough, as I say; yet you and I would never have heard of him, reader, but that, when the president of the court asked him at the close, whether he wished to say anything to show that he had always been faithful to the United States, he cried out, in a fit of frenzy, —

"D—n the United States! I wish I may never hear of the United States again!"

I suppose he did not know how the words shocked old Colonel Morgan, who was holding the court. Half the officers who sat in it had served through the Revolution, and their lives, not to say their necks, had been risked for the very idea which he so cavalierly cursed in his madness. He, on his part, had grown up in the West of those days, in the midst of "Spanish plot," "Orleans plot," and all the rest. He had been educated on a plantation, where the finest company was a Spanish officer or a French merchant from Orleans. His education, such as it was, had been perfected in commercial expeditions to Vera Cruz, and I think he told me his father once hired an Englishman to be a private tutor for a winter on the plantation. He had spent half his youth with an older brother, hunting horses in Texas; and, in a word, to him "United States" was scarcely a reality. Yet he had been fed by "United States" for all the years since he had been in the army. He had sworn on his faith as a Christian to be true to "United States." It was "United States" which gave him the uniform he wore, and the sword by his side. Nay, my poor Nolan, it was only because "United States" had picked you out first as one of her own confidential men of honor, that "A. Burr" cared for you a straw more than for the flat-boat men who sailed his ark for him. I do not excuse Nolan; I only explain to the reader why he damned his country, and wished he might never hear her name again.

He never did hear her name but once again. From that moment, September 23, 1807, till the day he died, May 11, 1863, he never heard her name again. For that half century and more he was a man without a country.

Old Morgan, as I said, was terribly shocked. If Nolan had compared George Washington to Benedict Arnold, or had cried, "God save King George," Morgan would not have felt worse. He called the court into his private room, and returned in fifteen minutes, with a face like a sheet, to say,—

"Prisoner, hear the sentence of the Court. The Court decides, subject to the approval of the President, that you never hear the name of the United States again."

Nolan laughed. But nobody else laughed. Old Morgan was too solemn, and the whole room was hushed dead as night for a minute. Even Nolan lost his swagger in a moment. Then Morgan added,—

"Mr. Marshal, take the prisoner to Orleans in an armed boat, and deliver him to the naval commander there."

The marshal gave his orders, and the prisoner was taken out of court.

"Mr. Marshal," continued old Morgan, "see that no one mentions the United States to the prisoner. Mr. Marshal, make my respects to Lieutenant Mitchell at Orleans, and request him to order that no one shall mention the United States to the prisoner while he is on board ship. You will receive your written orders from the officer on duty here this evening. The court is adjourned without day."

I have always supposed that Colonel Morgan himself took the proceedings of the court to Washington City, and explained them to Mr. Jefferson. Certain it is that the President approved them, — certain, that is, if I may believe the men who say they have seen his signature. Before the Nautilus got round from New Orleans to the Northern Atlantic coast with the prisoner on board, the sentence had been approved, and he was a man without a country.

The plan then adopted was substantially the same which was necessarily followed ever after. Perhaps it was suggested by the necessity of sending him by water from Fort Adams and Orleans. The Secretary of the Navy—it must have been the first Crowninshield, though he is a man I do not remember — was requested to put Nolan on board a Government vessel bound on a long cruise, and to direct that he should be only so far confined there as to make it cer-

tain that he never saw or heard of the country. We had few long cruises then, and the navy was very much out of favor; and as almost all of this story is traditional, as I have explained, I do not know certainly what his first cruise was. But the commander to whom he was intrusted — perhaps it was Tingey or Shaw, though I think it was one of the younger men, — we are all old enough now — regulated the etiquette and the precautions of the affair, and according to his scheme they were carried out, I suppose, till Nolan died.

When I was second officer of the Intrepid, some thirty years after, I saw the original paper of instructions. I have been sorry ever since that I did not copy the whole of it. It ran, however, much in this way: —

"*Washington*," (with the date, which must have been late in 1807.)

"SIR, — You will receive from Lt. Neale the person of Philip Nolan, late a Lieutenant in the United States Army.

"This person on his trial by court-martial expressed with an oath the wish that he might 'never hear of the United States again.'

"The Court sentenced him to have his wish fulfilled.

"For the present, the execution of the order is intrusted by the President to this department.

"You will take the prisoner on board your ship, and keep him there with such precautions as shall prevent his escape.

"You will provide him with such quarters, rations, and clothing as would be proper for an officer of his late rank, if he were a passenger on your vessel on the business of his Government.

"The gentlemen on board will make any arrangements agreeable to themselves regarding his society. He is to be exposed to no indignity of any kind, nor is he ever unnecessarily to be reminded that he is a prisoner.

"But under no circumstances is he ever to hear of his country or to see any information regarding it; and you will specially caution all the officers under your command to take care, that, in the various indulgences which may be granted, this rule, in which his punishment is involved, shall not be broken.

"It is the intention of the Government that he shall never again see the country which he has disowned. Before the end of your cruise you will receive orders which will give effect to this intention.

"Resp'y yours,
"W. SOUTHARD, for the
Sec'y of the Navy."

If I had only preserved the whole of this paper, there would be no break in the beginning of my sketch of this story. For Captain Shaw, if it was he, handed it to his successor in the charge, and he to his, and I suppose the commander of the Levant has it to-day as his authority for keeping this man in this mild custody.

The rule adopted on board the ships on which I have met "the man without a country" was, I think, transmitted from the beginning. No mess liked to have him permanently, because his presence cut off all talk of home or of the prospect of return, of politics or letters, of peace or of war,—cut off more than half the talk men like to have at sea. But it was always thought too hard that he should never meet the rest of us, except to touch hats, and we finally sank into one system. He was not permitted to talk with the men, unless an officer was by. With officers he had unrestrained intercourse, as far as they and he chose. But he grew shy, though he had favorites: I was one. Then the captain always asked him to dinner on Monday. Every mess in succession took up the invitation in its turn. According to the size of the ship, you had him at your mess more or less often at dinner. His breakfast he ate in his own state-room, — he always had a state-room, — which was where a sentinel, or somebody on the watch, could see the door. And whatever else he ate or

drank he ate or drank alone. Sometimes, when the marines or sailors had any special jollification, they were permitted to invite "Plain-Buttons," as they called him. Then Nolan was sent with some officer, and the men were forbidden to speak of home while he was there. I believe the theory was, that the sight of his punishment did them good. They called him "Plain-Buttons," because, while he always chose to wear a regulation army-uniform, he was not permitted to wear the army-button, for the reason that it bore either the initials or the insignia of the country he had disowned.

I remember, soon after I joined the navy, I was on shore with some of the older officers from our ship and from the Brandywine, which we had met at Alexandria. We had leave to make a party and go up to Cairo and the Pyramids. As we jogged along, (you went on donkeys then,) some of the gentlemen (we boys called them "Dons," but the phrase was long since changed) fell to talking about Nolan, and some one told the system which was adopted from the first about his books and other reading. As he was almost never permitted to go on shore, even though the vessel lay in port for months, his time, at the best, hung heavy; and everybody was permitted to lend him books, if they were not published in America and made no allusion to it. These were common enough in the old days, when people in the other hemisphere talked of the United States as little as we do of Paraguay. He had almost all the foreign papers that came into the ship, sooner or later; only somebody must go over them first, and cut out any advertisement or stray paragraph that alluded to America. This was a little cruel sometimes, when the back of what was cut out might be as innocent as Hesiod. Right in the midst of one of Napoleon's battles, or one of Canning's speeches, poor Nolan would find a great hole, because on the back of the page of that paper there had been an advertisement of a packet for New York, or a scrap from the President's message. I say this was the first time I ever heard of this plan, which afterwards I had enough, and more than enough, to do with. I remember it, because poor Phillips, who was of the party, as soon as the allusion to reading was made, told a story of something which happened at the Cape of Good Hope on Nolan's first voyage; and it is the only thing I ever knew of that voyage. They had touched at the Cape, and had done the civil thing with the English Admiral and the fleet, and then, leaving for a long cruise up the Indian Ocean, Phillips had borrowed a lot of English books from an officer, which, in those days, as indeed in these, was quite a windfall. Among them, as the Devil would order, was the "Lay of the Last Minstrel," which they had all of them heard of, but which most of them had never seen. I think it could not have been published long. Well, nobody thought there could be any risk of anything national in that, though Phillips swore old Shaw had cut out the "Tempest" from Shakspeare before he let Nolan have it, because he said "the Bermudas ought to be ours, and, by Jove, should be one day." So Nolan was permitted to join the circle one afternoon when a lot of them sat on deck smoking and reading aloud. People do not do such things so often now; but when I was young we got rid of a great deal of time so. Well, so it happened that in his turn Nolan took the book and read to the others; and he read very well, as I know. Nobody in the circle knew a line of the poem, only it was all magic and Border chivalry, and was ten thousand years ago. Poor Nolan read steadily through the fifth canto, stopped a minute and drank something, and then began, without a thought of what was coming, —

> "Breathes there the man, with soul so dead,
> Who never to himself hath said," ——

It seems impossible to us that anybody ever heard this for the first time; but all these fellows did then, and poor Nolan himself went on, still unconsciously or mechanically, —

> "This is my own, my native land!"

Then they all saw something was to pay; but he expected to get through, I suppose, turned a little pale, but plunged on, —

"Whose heart hath ne'er within him burned,
As home his footsteps he hath turned
From wandering on a foreign strand? —
If such there breathe, go, mark him well."

By this time the men were all beside themselves, wishing there was any way to make him turn over two pages; but he had not quite presence of mind for that; he gagged a little, colored crimson, and staggered on, —

"For him no minstrel raptures swell;
High though his titles, proud his name,
Boundless his wealth as wish can claim,
Despite these titles, power, and pelf,
The wretch, concentred all in self," ——

and here the poor fellow choked, could not go on, but started up, swung the book into the sea, vanished into his state-room, "and by Jove," said Phillips, "we did not see him for two months again. And I had to make up some beggarly story to that English surgeon why I did not return his Walter Scott to him."

That story shows about the time when Nolan's braggadocio must have broken down. At first, they said, he took a very high tone, considered his imprisonment a mere farce, affected to enjoy the voyage, and all that; but Phillips said that after he came out of his state-room he never was the same man again. He never read aloud again, unless it was the Bible or Shakspeare, or something else he was sure of. But it was not that merely. He never entered in with the other young men exactly as a companion again. He was always shy afterwards, when I knew him,—very seldom spoke, unless he was spoken to, except to a very few friends. He lighted up occasionally,—I remember late in his life hearing him fairly eloquent on something which had been suggested to him by one of Fléchier's sermons, — but generally he had the nervous, tired look of a heart-wounded man.

When Captain Shaw was coming home, — if, as I say, it was Shaw, — rather to the surprise of everybody they made one of the Windward Islands, and lay off and on for nearly a week. The boys said the officers were sick of salt-junk, and meant to have turtle-soup before they came home. But after several days the Warren came to the same rendezvous; they exchanged signals; she sent to Phillips and these homeward-bound men letters and papers, and told them she was outward-bound, perhaps to the Mediterranean, and took poor Nolan and his traps on the boat back to try his second cruise. He looked very blank when he was told to get ready to join her. He had known enough of the signs of the sky to know that till that moment he was going "home." But this was a distinct evidence of something he had not thought of, perhaps,—that there was no going home for him, even to a prison. And this was the first of some twenty such transfers, which brought him sooner or later into half our best vessels, but which kept him all his life at least some hundred miles from the country he had hoped he might never hear of again.

It may have been on that second cruise, — it was once when he was up the Mediterranean,—that Mrs. Graff, the celebrated Southern beauty of those days, danced with him. They had been lying a long time in the Bay of Naples, and the officers were very intimate in the English fleet, and there had been great festivities, and our men thought they must give a great ball on board the ship. How they ever did it on board the Warren I am sure I do not know. Perhaps it was not the Warren, or perhaps ladies did not take up so much room as they do now. They wanted to use Nolan's state-room for something, and they hated to do it without asking him to the ball; so the captain said they might ask him, if they would be responsible that he did not talk with the wrong people, "who would give him intelligence." So the dance went on, the finest party that had ever been known, I dare say; for I never heard of a man-of-war ball that was not. For ladies

they had the family of the American consul, one or two travellers who had adventured so far, and a nice bevy of English girls and matrons, perhaps Lady Hamilton herself.

Well, different officers relieved each other in standing and talking with Nolan in a friendly way, so as to be sure that nobody else spoke to him. The dancing went on with spirit, and after a while even the fellows who took this honorary guard of Nolan ceased to fear any *contre-temps*. Only when some English lady — Lady Hamilton, as I said, perhaps — called for a set of "American dances," an odd thing happened. Everybody then danced contra-dances. The black band, nothing loath, conferred as to what "American dances" were, and started off with "Virginia Reel," which they followed with "Money-Musk," which, in its turn in those days, should have been followed by "The Old Thirteen." But just as Dick, the leader, tapped for his fiddles to begin, and bent forward, about to say, in true negro state, "'The Old Thirteen,' gentlemen and ladies!" as he had said, "'Virginny Reel,' if you please!" and "'Money-Musk,' if you please!" the captain's boy tapped him on the shoulder, whispered to him, and he did not announce the name of the dance; he merely bowed, began on the air, and they all fell to,—the officers teaching the English girls the figure, but not telling them why it had no name.

But that is not the story I started to tell.—As the dancing went on, Nolan and our fellows all got at ease, as I said,—so much so, that it seemed quite natural for him to bow to that splendid Mrs. Graff, and say,—

"I hope you have not forgotten me, Miss Rutledge. Shall I have the honor of dancing?"

He did it so quickly, that Shubrick, who was by him, could not hinder him. She laughed, and said,—

"I am not Miss Rutledge any longer, Mr. Nolan; but I will dance all the same," just nodded to Shubrick, as if to say he must leave Mr. Nolan to her, and led him off to the place where the dance was forming.

Nolan thought he had got his chance. He had known her at Philadelphia, and at other places had met her, and this was a Godsend. You could not talk in contra-dances, as you do in cotillons, or even in the pauses of waltzing; but there were chances for tongues and sounds, as well as for eyes and blushes. He began with her travels, and Europe, and Vesuvius, and the French; and then, when they had worked down, and had that long talking-time at the bottom of the set, he said, boldly,—a little pale, she said, as she told me the story, years after,—

"And what do you hear from home, Mrs. Graff?"

And that splendid creature looked through him. Jove! how she must have looked through him!

"Home!! Mr. Nolan!!! I thought you were the man who never wanted to hear of home again!"—and she walked directly up the deck to her husband, and left poor Nolan alone, as he always was. — He did not dance again.

I cannot give any history of him in order: nobody can now: and, indeed, I am not trying to. These are the traditions, which I sort out, as I believe them, from the myths which have been told about this man for forty years. The lies that have been told about him are legion. The fellows used to say he was the "Iron Mask"; and poor George Pons went to his grave in the belief that this was the author of "Junius," who was being punished for his celebrated libel on Thomas Jefferson. Pons was not very strong in the historical line. A happier story than either of these I have told is of the War. That came along soon after. I have heard this affair told in three or four ways,—and, indeed, it may have happened more than once. But which ship it was on I cannot tell. However, in one, at least, of the great frigate-duels with the English, in which the navy was really baptized, it happened that a round shot from the enemy entered one of our ports square, and took right down

the officer of the gun himself, and almost every man of the gun's crew. Now you may say what you choose about courage, but that is not a nice thing to see. But, as the men who were not killed picked themselves up, and as they and the surgeon's people were carrying off the bodies, there appeared Nolan, in his shirt-sleeves, with the rammer in his hand, and, just as if he had been the officer, told them off with authority, — who should go to the cockpit with the wounded men, who should stay with him, — perfectly cheery, and with that way which makes men feel sure all is right and is going to be right. And he finished loading the gun with his own hands, aimed it, and bade the men fire. And there he stayed, captain of that gun, keeping those fellows in spirits, till the enemy struck, — sitting on the carriage while the gun was cooling, though he was exposed all the time, — showing them easier ways to handle heavy shot, — making the raw hands laugh at their own blunders, — and when the gun cooled again, getting it loaded and fired twice as often as any other gun on the ship. The captain walked forward, by way of encouraging the men, and Nolan touched his hat and said, —

"I am showing them how we do this in the artillery, Sir."

And this is the part of the story where all the legends agree: that the Commodore said, —

"I see you do, and I thank you, Sir; and I shall never forget this day, Sir, and you never shall, Sir."

And after the whole thing was over, and he had the Englishman's sword, in the midst of the state and ceremony of the quarter-deck, he said, —

"Where is Mr. Nolan? Ask Mr. Nolan to come here."

And when Nolan came, the captain said, —

"Mr. Nolan, we are all very grateful to you to-day; you are one of us to-day; you will be named in the despatches."

And then the old man took off his own sword of ceremony, and gave it to Nolan, and made him put it on. The man told me this who saw it. Nolan cried like a baby, and well he might. He had not worn a sword since that infernal day at Fort Adams. But always afterwards, on occasions of ceremony, he wore that quaint old French sword of the Commodore's.

The captain did mention him in the despatches. It was always said he asked that he might be pardoned. He wrote a special letter to the Secretary of War. But nothing ever came of it. As I said, that was about the time when they began to ignore the whole transaction at Washington, and when Nolan's imprisonment began to carry itself on because there was nobody to stop it without any new orders from home.

I have heard it said that he was with Porter when he took possession of the Nukahiwa Islands. Not this Porter, you know, but old Porter, his father, Essex Porter, — that is, the old Essex Porter, not this Essex. As an artillery officer, who had seen service in the West, Nolan knew more about fortifications, embrasures, ravelins, stockades, and all that, than any of them did; and he worked with a right good will in fixing that battery all right. I have always thought it was a pity Porter did not leave him in command there with Gamble. That would have settled all the question about his punishment. We should have kept the islands, and at this moment we should have one station in the Pacific Ocean. Our French friends, too, when they wanted this little watering-place, would have found it was preoccupied. But Madison and the Virginians, of course, flung all that away.

All that was near fifty years ago. If Nolan was thirty then, he must have been near eighty when he died. He looked sixty when he was forty. But he never seemed to me to change a hair afterwards. As I imagine his life, from what I have seen and heard of it, he must have been in every sea, and yet almost never on land. He must have known, in a formal way, more officers in our service than any

man living knows. He told me once, with a grave smile, that no man in the world lived so methodical a life as he. "You know the boys say I am the Iron Mask, and you know how busy he was." He said it did not do for any one to try to read all the time, more than to do anything else all the time; but that he read just five hours a day. "Then," he said, "I keep up my note-books, writing in them at such and such hours from what I have been reading; and I include in these my scrap-books." These were very curious indeed. He had six or eight, of different subjects. There was one of History, one of Natural Science, one which he called "Odds and Ends." But they were not merely books of extracts from newspapers. They had bits of plants and ribbons, shells tied on, and carved scraps of bone and wood, which he had taught the men to cut for him, and they were beautifully illustrated. He drew admirably. He had some of the funniest drawings there, and some of the most pathetic, that I have ever seen in my life. I wonder who will have Nolan's scrap-books.

Well, he said his reading and his notes were his profession, and that they took five hours and two hours respectively of each day. "Then," said he, "every man should have a diversion as well as a profession. My Natural History is my diversion." That took two hours a day more. The men used to bring him birds and fish, but on a long cruise he had to satisfy himself with centipedes and cockroaches and such small game. He was the only naturalist I ever met who knew anything about the habits of the house-fly and the mosquito. All those people can tell you whether they are *Lepidoptera* or *Steptopotera;* but as for telling how you can get rid of them, or how they get away from you when you strike them, —why, Linnæus knew as little of that as John Foy the idiot did. These nine hours made Nolan's regular daily "occupation." The rest of the time he talked or walked. Till he grew very old, he went aloft a great deal. He always kept up his exercise; and I never heard that he was ill. If any other man was ill, he was the kindest nurse in the world; and he knew more than half the surgeons do. Then if anybody was sick or died, or if the captain wanted him to on any other occasion, he was always ready to read prayers. I have remarked that he read beautifully.

My own acquaintance with Philip Nolan began six or eight years after the War, on my first voyage after I was appointed a midshipman. It was in the first days after our Slave-Trade treaty, while the Reigning House, which was still the House of Virginia, had still a sort of sentimentalism about the suppression of the horrors of the Middle Passage, and something was sometimes done that way. We were in the South Atlantic on that business. From the time I joined, I believe I thought Nolan was a sort of lay chaplain, — a chaplain with a blue coat. I never asked about him. Everything in the ship was strange to me. I knew it was green to ask questions, and I suppose I thought there was a "Plain-Buttons" on every ship. We had him to dine in our mess once a week, and the caution was given that on that day nothing was to be said about home. But if they had told us not to say anything about the planet Mars or the Book of Deuteronomy, I should not have asked why; there were a great many things which seemed to me to have as little reason. I first came to understand anything about "the man without a country" one day when we overhauled a dirty little schooner which had slaves on board. An officer was sent to take charge of her, and, after a few minutes, he sent back his boat to ask that some one might be sent him who could speak Portuguese. We were all looking over the rail when the message came, and we all wished we could interpret, when the captain asked who spoke Portuguese. But none of the officers did; and just as the captain was sending forward to ask if any of the people could, Nolan stepped out and said he should be glad to interpret, if the

captain wished, as he understood the language. The captain thanked him, fitted out another boat with him, and in this boat it was my luck to go.

When we got there, it was such a scene as you seldom see, and never want to. Nastiness beyond account, and chaos run loose in the midst of the nastiness. There were not a great many of the negroes; but by way of making what there were understand that they were free, Vaughan had had their hand-cuffs and ankle-cuffs knocked off, and, for convenience' sake, was putting them upon the rascals of the schooner's crew. The negroes were, most of them, out of the hold, and swarming all round the dirty deck, with a central throng surrounding Vaughan and addressing him in every dialect and *patois* of a dialect, from the Zulu click up to the Parisian of Beledeljereed.

As we came on deck, Vaughan looked down from a hogshead, on which he had mounted in desperation, and said, —

"For God's love, is there anybody who can make these wretches understand something? The men gave them rum, and that did not quiet them. I knocked that big fellow down twice, and that did not soothe him. And then I talked Choctaw to all of them together; and I 'll be hanged if they understood that as well as they understood the English."

Nolan said he could speak Portuguese, and one or two fine-looking Kroomen were dragged out, who, as it had been found already, had worked for the Portuguese on the coast at Fernando Po.

"Tell them they are free," said Vaughan; "and tell them that these rascals are to be hanged as soon as we can get rope enough."

Nolan "put that into Spanish,"* —that is, he explained it in such Portuguese as the Kroomen could understand, and they in turn to such of the negroes as could understand them. Then there was such a yell of delight, clinching of fists, leaping and dancing, kissing of Nolan's feet, and a general rush made to the hogshead by way of spontaneous worship of Vaughan, as the *deus ex machina* of the occasion.

"Tell them," said Vaughan, well pleased, "that I will take them all to Cape Palmas."

This did not answer so well. Cape Palmas was practically as far from the homes of most of them as New Orleans or Rio Janeiro was; that is, they would be eternally separated from home there. And their interpreters, as we could understand, instantly said, "*Ah, non Palmas*," and began to propose infinite other expedients in most voluble language. Vaughan was rather disappointed at this result of his liberality, and asked Nolan eagerly what they said. The drops stood on poor Nolan's white forehead, as he hushed the men down, and said,—

"He says, 'Not Palmas.' He says, 'Take us home, take us to our own country, take us to our own house, take us to our own pickaninnies and our own women.' He says he has an old father and mother, who will die, if they do not see him. And this one says he left his people all sick, and paddled down to Fernando to beg the white doctor to come and help them, and that these devils caught him in the bay just in sight of home, and that he has never seen anybody from home since then. And this one says," choked out Nolan, "that he has not heard a word from his home in six months, while he has been locked up in an infernal barracoon."

Vaughan always said he grew gray himself while Nolan struggled through this interpretation. I, who did not understand anything of the passion involved

* The phrase is General Taylor's. When Santa Aña brought up his immense army at Buena Vista, he sent a flag of truce to invite Taylor to surrender. "Tell him to go to hell," said old Rough-and-Ready. "Bliss, put that into Spanish." "Perfect Bliss," as this accomplished officer, too early lost, was called, interpreted liberally, replying to the flag, in exquisite Castilian, "Say to General Santa Aña, that, if he wants us, he must come and take us." And this is the answer which has gone into history.

in it, saw that the very elements were melting with fervent heat, and that something was to pay somewhere. Even the negroes themselves stopped howling, as they saw Nolan's agony, and Vaughan's almost equal agony of sympathy. As quick as he could get words, he said, —

"Tell them yes, yes, yes; tell them they shall go to the Mountains of the Moon, if they will. If I sail the schooner through the Great White Desert, they shall go home!"

And after some fashion Nolan said so. And then they all fell to kissing him again, and wanted to rub his nose with theirs.

But he could not stand it long; and getting Vaughan to say he might go back, he beckoned me down into our boat. As we lay back in the stern-sheets and the men gave way, he said to me, — "Youngster, let that show you what it is to be without a family, without a home, and without a country. And if you are ever tempted to say a word or to do a thing that shall put a bar between you and your family, your home, and your country, pray God in His mercy to take you that instant home to His own heaven. Stick by your family, boy; forget you have a self, while you do everything for them. Think of your home, boy; write and send, and talk about it. Let it be nearer and nearer to your thought, the farther you have to travel from it; and rush back to it, when you are free, as that poor black slave is doing now. And for your country, boy," and the words rattled in his throat, "and for that flag," and he pointed to the ship, "never dream a dream but of serving her as she bids you, though the service carry you through a thousand hells. No matter what happens to you, no matter who flatters you or who abuses you, never look at another flag, never let a night pass but you pray God to bless that flag. Remember, boy, that behind all these men you have to do with, behind officers, and government, and people even, there is the Country Herself, your Country, and that you belong to Her as you belong to your own mother. Stand by Her, boy, as you would stand by your mother, if those devils there had got hold of her to-day!"

I was frightened to death by his calm, hard passion; but I blundered out, that I would, by all that was holy, and that I had never thought of doing anything else. He hardly seemed to hear me; but he did, almost in a whisper, say, — "Oh, if anybody had said so to me when I was of your age!"

I think it was this half-confidence of his, which I never abused, for I never told this story till now, which afterward made us great friends. He was very kind to me. Often he sat up, or even got up, at night to walk the deck with me, when it was my watch. He explained to me a great deal of my mathematics, and I owe to him my taste for mathematics. He lent me books, and helped me about my reading. He never alluded so directly to his story again; but from one and another officer I have learned, in thirty years, what I am telling. When we parted from him in St. Thomas harbor, at the end of our cruise, I was more sorry than I can tell. I was very glad to meet him again in 1830; and later in life, when I thought I had some influence in Washington, I moved heaven and earth to have him discharged. But it was like getting a ghost out of prison. They pretended there was no such man, and never was such a man. They will say so at the Department now! Perhaps they do not know. It will not be the first thing in the service of which the Department appears to know nothing!

There is a story that Nolan met Burr once on one of our vessels, when a party of Americans came on board in the Mediterranean. But this I believe to be a lie; or rather, it is a myth, *ben trovato*, involving a tremendous blowing-up with which he sunk Burr, — asking him how he liked to be "without a country." But it is clear, from Burr's life, that nothing of the sort could have happened; and I mention this only as an illustration of the stories which get a-going where there is the least mystery at bottom.

So poor Philip Nolan had his wish fulfilled. I know but one fate more dreadful: it is the fate reserved for those men who shall have one day to exile themselves from their country because they have attempted her ruin, and shall have at the same time to see the prosperity and honor to which she rises when she has rid herself of them and their iniquities. The wish of poor Nolan, as we all learned to call him, not because his punishment was too great, but because his repentance was so clear, was precisely the wish of every Bragg and Beauregard who broke a soldier's oath two years ago, and of every Maury and Barron who broke a sailor's. I do not know how often they have repented. I do know that they have done all that in them lay that they might have no country, — that all the honors, associations, memories, and hopes which belong to "country" might be broken up into little shreds and distributed to the winds. I know, too, that their punishment, as they vegetate through what is left of life to them in wretched Boulognes and Leicester Squares, where they are destined to upbraid each other till they die, will have all the agony of Nolan's, with the added pang that every one who sees them will see them to despise and to execrate them. They will have their wish, like him.

For him, poor fellow, he repented of his folly, and then, like a man, submitted to the fate he had asked for. He never intentionally added to the difficulty or delicacy of the charge of those who had him in hold. Accidents would happen; but they never happened from his fault. Lieutenant Truxton told me, that, when Texas was annexed, there was a careful discussion among the officers, whether they should get hold of Nolan's handsome set of maps, and cut Texas out of it, — from the map of the world and the map of Mexico. The United States had been cut out when the atlas was bought for him. But it was voted, rightly enough, that to do this would be virtually to reveal to him what had happened, or, as Harry Cole said, to make him think Old Burr had succeeded. So it was from no fault of Nolan's that a great botch happened at my own table, when, for a short time, I was in command of the George Washington corvette, on the South-American station. We were lying in the La Plata, and some of the officers, who had been on shore, and had just joined again, were entertaining us with accounts of their misadventures in riding the half-wild horses of Buenos Ayres. Nolan was at table, and was in an unusually bright and talkative mood. Some story of a tumble reminded him of an adventure of his own, when he was catching wild horses in Texas with his brother Stephen, at a time when he must have been quite a boy. He told the story with a good deal of spirit, — so much so, that the silence which often follows a good story hung over the table for an instant, to be broken by Nolan himself. For he asked, perfectly unconsciously, —

"Pray, what has become of Texas? After the Mexicans got their independence, I thought that province of Texas would come forward very fast. It is really one of the finest regions on earth; it is the Italy of this continent. But I have not seen or heard a word of Texas for near twenty years."

There were two Texan officers at the table. The reason he had never heard of Texas was that Texas and her affairs had been painfully cut out of his newspapers since Austin began his settlements; so that, while he read of Honduras and Tamaulipas, and, till quite lately, of California, this virgin province, in which his brother had travelled so far, and, I believe, had died, had ceased to be to him. Waters and Williams, the two Texas men, looked grimly at each other, and tried not to laugh. Edward Morris had his attention attracted by the third link in the chain of the captain's chandelier. Watrous was seized with a convulsion of sneezing. Nolan himself saw that something was to pay, he did not know what. And I, as master of the feast, had to say, —

"Texas is out of the map, Mr. Nolan.

Have you seen Captain Back's curious account of Sir Thomas Roe's Welcome?"

After that cruise I never saw Nolan again. I wrote to him at least twice a year, for in that voyage we became even confidentially intimate; but he never wrote to me. The other men tell me that in those fifteen years he *aged* very fast, as well he might indeed, but that he was still the same gentle, uncomplaining, silent sufferer that he ever was, bearing as best he could his self-appointed punishment,—rather less social, perhaps, with new men whom he did not know, but more anxious, apparently, than ever to serve and befriend and teach the boys, some of whom fairly seemed to worship him. And now it seems the dear old fellow is dead. He has found a home at last, and a country.

Since writing this, and while considering whether or no I would print it, as a warning to the young Nolans and Vallandighams and Tatnalls of to-day of what it is to throw away a country, I have received from Danforth, who is on board the Levant, a letter which gives an account of Nolan's last hours. It removes all my doubts about telling this story.

To understand the first words of the letter, the non-professional reader should remember that after 1817 the position of every officer who had Nolan in charge was one of the greatest delicacy. The Government had failed to renew the order of 1807 regarding him. What was a man to do? Should he let him go? What, then, if he were called to account by the Department for violating the order of 1807? Should he keep him? What, then, if Nolan should be liberated some day, and should bring an action for false imprisonment or kidnapping against every man who had had him in charge? I urged and pressed this upon Southard, and I have reason to think that other officers did the same thing. But the Secretary always said, as they so often do at Washington, that there were no special orders to give, and that we must act on our own judgment. That means, "If you succeed, you will be sustained; if you fail, you will be disavowed." Well, as Danforth says, all that is over now, though I do not know but I expose myself to a criminal prosecution on the evidence of the very revelation I am making.

Here is the letter: —

"*Levant*, 2° 2′ S. @ 131° W.

"Dear Fred, — I try to find heart and life to tell you that it is all over with dear old Nolan. I have been with him on this voyage more than I ever was, and I can understand wholly now the way in which you used to speak of the dear old fellow. I could see that he was not strong, but I had no idea the end was so near. The doctor had been watching him very carefully, and yesterday morning came to me and told me that Nolan was not so well, and had not left his state-room, — a thing I never remember before. He had let the doctor come and see him as he lay there, — the first time the doctor had been in the state-room, — and he said he should like to see me. Oh, dear! do you remember the mysteries we boys used to invent about his room, in the old Intrepid days? Well, I went in, and there, to be sure, the poor fellow lay in his berth, smiling pleasantly as he gave me his hand, but looking very frail. I could not help a glance round, which showed me what a little shrine he had made of the box he was lying in. The stars and stripes were triced up above and around a picture of Washington, and he had painted a majestic eagle, with lightnings blazing from his beak and his foot just clasping the whole globe, which his wings overshadowed. The dear old boy saw my glance, and said, with a sad smile, 'Here, you see, I have a country!' And then he pointed to the foot of his bed, where I had not seen before a great map of the United States, as he had drawn it from memory, and which he had there to look upon as he lay. Quaint, queer old names were on it, in large letters: 'Indiana Territory,' 'Mississippi Territory,' and 'Louisiana

Territory,' as I suppose our fathers learned such things: but the old fellow had patched in Texas, too; he had carried his western boundary all the way to the Pacific, but on that shore he had defined nothing.

"'Oh, Danforth,' he said, 'I know I am dying. I cannot get home. Surely you will tell me something now?—Stop! stop! Do not speak till I say what I am sure you know, that there is not in this ship, that there is not in America,—God bless her!—a more loyal man than I. There cannot be a man who loves the old flag as I do, or prays for it as I do, or hopes for it as I do. There are thirty-four stars in it now, Danforth. I thank God for that, though I do not know what their names are. There has never been one taken away: I thank God for that. I know by that, that there has never been any successful Burr. Oh, Danforth, Danforth,' he sighed out, 'how like a wretched night's dream a boy's idea of personal fame or of separate sovereignty seems, when one looks back on it after such a life as mine! But tell me,—tell me something,—tell me everything, Danforth, before I die!'

"Ingham, I swear to you that I felt like a monster that I had not told him everything before. Danger or no danger, delicacy or no delicacy, who was I, that I should have been acting the tyrant all this time over this dear, sainted old man, who had years ago expiated, in his whole manhood's life, the madness of a boy's treason? 'Mr. Nolan,' said I, 'I will tell you everything you ask about. Only, where shall I begin?'

"Oh, the blessed smile that crept over his white face! and he pressed my hand and said, 'God bless you!' 'Tell me their names,' he said, and he pointed to the stars on the flag. 'The last I know is Ohio. My father lived in Kentucky. But I have guessed Michigan and Indiana and Mississippi,—that was where Fort Adams is,—they make twenty. But where are your other fourteen? You have not cut up any of the old ones, I hope?'

"Well, that was not a bad text, and I told him the names, in as good order as I could, and he bade me take down his beautiful map and draw them in as I best could with my pencil. He was wild with delight about Texas, told me how his brother died there; he had marked a gold cross where he supposed his brother's grave was; and he had guessed at Texas. Then he was delighted as he saw California and Oregon;—that, he said, he had suspected partly, because he had never been permitted to land on that shore, though the ships were there so much. 'And the men,' said he, laughing, 'brought off a good deal besides furs.' Then he went back—heavens, how far!—to ask about the Chesapeake, and what was done to Barron for surrendering her to the Leopard, and whether Burr ever tried again,—and he ground his teeth with the only passion he showed. But in a moment that was over, and he said, 'God forgive me, for I am sure I forgive him.' Then he asked about the old war,—told me the true story of his serving the gun the day we took the Java,—asked about dear old David Porter, as he called him. Then he settled down more quietly, and very happily, to hear me tell in an hour the history of fifty years.

"How I wished it had been somebody who knew something! But I did as well as I could. I told him of the English war. I told him about Fulton and the steamboat beginning. I told him about old Scott, and Jackson; told him all I could think about the Mississippi, and New Orleans, and Texas, and his own old Kentucky. And do you think he asked who was in command of the "Legion of the West." I told him it was a very gallant officer, named Grant, and that, by our last news, he was about to establish his head-quarters at Vicksburg. Then, 'Where was Vicksburg?' I worked that out on the map; it was about a hundred miles, more or less, above his old Fort Adams; and I thought Fort Adams must be a ruin now. 'It must be at old Vicks's plantation,' said he; 'well, that is a change!'

"I tell you, Ingham, it was a hard thing to condense the history of half a century into that talk with a sick man. And I do not now know what I told him, — of emigration, and the means of it, — of steamboats and railroads and telegraphs, — of inventions and books and literature, — of the colleges and West Point and the Naval School, — but with the queerest interruptions that ever you heard. You see it was Robinson Crusoe asking all the accumulated questions of fifty-six years!

"I remember he asked, all of a sudden, who was President now; and when I told him, he asked if Old Abe was General Benjamin Lincoln's son. He said he met old General Lincoln, when he was quite a boy himself, at some Indian treaty. I said no, that Old Abe was a Kentuckian like himself, but I could not tell him of what family; he had worked up from the ranks. 'Good for him!' cried Nolan; 'I am glad of that. As I have brooded and wondered, I have thought our danger was in keeping up those regular successions in the first families.' Then I got talking about my visit to Washington. I told him of meeting the Oregon Congressman, Harding; I told him about the Smithsonian and the Exploring Expedition; I told him about the Capitol, — and the statues for the pediment, — and Crawford's Liberty, — and Greenough's Washington: Ingham, I told him everything I could think of that would show the grandeur of his country and its prosperity; but I could not make up my mouth to tell him a word about this infernal Rebellion!

"And he drank it in, and enjoyed it as I cannot tell you. He grew more and more silent, yet I never thought he was tired or faint. I gave him a glass of water, but he just wet his lips, and told me not to go away. Then he asked me to bring the Presbyterian 'Book of Public Prayer,' which lay there, and said, with a smile, that it would open at the right place,—and so it did. There was his double red mark down the page; and I knelt down and read, and he repeated with me,—'For ourselves and our country, O gracious God, we thank Thee, that, notwithstanding our manifold transgressions of Thy holy laws, Thou hast continued to us Thy marvellous kindness,'—and so to the end of that thanksgiving. Then he turned to the end of the same book, and I read the words more familiar to me, — 'Most heartily we beseech Thee with Thy favor to behold and bless Thy servant, the President of the United States, and all others in authority,'—and the rest of the Episcopal collect. 'Danforth,' said he, 'I have repeated those prayers night and morning, it is now fifty-five years.' And then he said he would go to sleep. He bent me down over him and kissed me; and he said, 'Look in my Bible, Danforth, when I am gone.' And I went away.

"But I had no thought it was the end. I thought he was tired and would sleep. I knew he was happy, and I wanted him to be alone.

"But in an hour, when the doctor went in gently, he found Nolan had breathed his life away with a smile. He had something pressed close to his lips. It was his father's badge of the Order of Cincinnati.

"We looked in his Bible, and there was a slip of paper, at the place where he had marked the text, —

"'They desire a country, even a heavenly: wherefore God is not ashamed to be called their God: for he hath prepared for them a city.'

"On this slip of paper he had written,—

"'Bury me in the sea; it has been my home, and I love it. But will not some one set up a stone for my memory at Fort Adams or at Orleans, that my disgrace may not be more than I ought to bear? Say on it, —

"'*In Memory of*

"'PHILIP NOLAN,

"'*Lieutenant in the Army of the United States.*

"'He loved his country as no other man has loved her; but no man deserved less at her hands.'"

THE BIRDS OF KILLINGWORTH.

It was the season when through all the land
  The merle and mavis build, and building sing
Those lovely lyrics written by His hand
  Whom Saxon Cædmon calls the Blithe-Heart King, —
When on the boughs the purple buds expand,
  The banners of the vanguard of the Spring,
And rivulets, rejoicing, rush and leap,
And wave their fluttering signals from the steep.

The robin and the bluebird, piping loud,
  Filled all the blossoming orchards with their glee;
The sparrows chirped as if they still were proud
  Their race in Holy Writ should mentioned be;
And hungry crows, assembled in a crowd,
  Clamored their piteous prayer incessantly,
Knowing who hears the ravens cry, and said,
"Give us, O Lord, this day our daily bread!"

Across the Sound the birds of passage sailed,
  Speaking some unknown language strange and sweet
Of tropic isle remote, and passing hailed
  The village with the cheers of all their fleet, —
Or, quarrelling together, laughed and railed
  Like foreign sailors landed in the street
Of seaport town, and with outlandish noise
Of oaths and gibberish frightening girls and boys.

Thus came the jocund Spring in Killingworth,
  In fabulous days, some hundred years ago;
And thrifty farmers, as they tilled the earth,
  Heard with alarm the cawing of the crow,
That mingled with the universal mirth,
  Cassandra-like, prognosticating woe:
They shook their heads, and doomed with dreadful words
To swift destruction the whole race of birds.

And a town-meeting was convened straightway
  To set a price upon the guilty heads
Of these marauders, who, in lieu of pay,
  Levied black-mail upon the garden-beds
And cornfields, and beheld without dismay
  The awful scarecrow, with his fluttering shreds, —
The skeleton that waited at their feast,
Whereby their sinful pleasure was increased.

Then from his house, a temple painted white,
  With fluted columns, and a roof of red,

Atlantic Monthly Check

Florida or Porto Rico as the price of the restoration of that portion of Cuba which was in English hands. The Spaniards gladly complied with the British demand, and gave Florida in exchange for Cuba. At one time it was supposed that the victory of Albemarle and Pocock would lead to the continuance of the war. Horace Walpole wrote to his friend Conway that the Havana was more likely to break off the peace than to advance it, and that the English were not in a humor to give up the world, but were much more disposed to conquer the rest of it. He added, "We shall have some cannonading here, I believe, if we sign the peace." But the King and the Premier were peace-at-any-price men, and the way to their purpose was smoothed completely; yet Lord Bute wrote to the Duke of Bedford, on the 24th of October, "Such is the change made here by the conquest of the Havana, that I solemnly declare, I don't meet with one man, let his attachment be never so strong to the service of the King, his wishes for peace never so great, that does not positively affirm, this rich acquisition must not be ceded without satisfaction in the fishery, and some material compensation: this is so much the opinion of all the King's servants, that the greatest care has been taken to soften every expression," etc. In July, 1763, the English restored their acquisitions in Cuba to the Spaniards, and their soldiers returned to Europe.

In a few years it was seen that the Bute arrangement, so far as concerned the Havana, was, for England, thoroughly a Glaucian bargain. She had obtained Florida, which was of no worth to her, and she had given up the Havana, which might have been made one of her most useful acquisitions. That place became the chief American port of the great alliance that was formed against England after she had become committed to war with the new United States. Great fleets and armies were there assembled, which did the English much mischief. Florida was reconquered by an expedition from the Havana, and another expedition was successful in an attack on Nassau; and Jamaica was threatened. Had England not given up the place to the Spaniards, not only would these things have been impossible, but she might have employed it with effect in her own military operations, and have maintained her ascendency in the West-Indian seas. Or, if she had preferred that course, she might have made it the price of Spain's neutrality during the American War, returning it to her on condition that she should not assist the United States; and as the Family Compact then existed in all its force, Spain's influence might have been found sufficiently powerful to prevent France from giving that assistance to our fathers which undoubtedly secured their independence. All subsequent history has been deeply colored by the surrender of the Havana in 1763. But for that, Washington and his associates might have failed. But for that, the French Revolution might have been postponed, as that Revolution was precipitated through the existence of financial difficulties which were largely owing to the part France took in the war that ended in the establishment of our nationality. But for that, England might have secured and consolidated her American dominion, and the House of Hanover at this moment have been ruling over the present United States and Confederate States. George III. and Lord Bute could not foresee any of these things, and they cannot be censured because they were blind to what was invisible to all men; but their reckless desire for peace led them to regret the successes of the English arms, and they were ready to make any sacrifices that could be named, not because they loved peace for itself, but because, while the war should last, it would not be possible for the monarch to follow his mother's advice to "be a king" in fact as well as in name, — advice that was destined to cost the King much, and his realm far more.

EQUINOCTIAL.

The Sun of Life has crossed the line:
  The summer-shine of lengthened light
Faded and failed, — till, where I stand,
  'T is equal Day and equal Night.

One after one, as dwindling hours,
  Youth's glowing hopes have dropped away,
And soon may barely leave the gleam
  That coldly scores a winter's day.

I am not young, I am not old;
  The flush of morn, the sunset calm,
Paling, and deepening, each to each,
  Meet midway with a solemn charm.

One side I see the summer fields
  Not yet disrobed of all their green;
While westerly, along the hills,
  Flame the first tints of frosty sheen.

Ah, middle-point, where cloud and storm
  Make battle-ground of this my life!
Where, even-matched, the Night and Day
  Wage round me their September strife!

I bow me to the threatening gale:
  I know, when that is overpast,
Among the peaceful harvest-days,
  An Indian-summer comes at last!

THE LEGEND OF MONTE DEL DIABLO.

The cautious reader will detect a lack of authenticity in the following pages. I am not a cautious reader myself, yet I confess with some concern to the absence of much documentary evidence in support of the singular incident I am about to relate. Disjointed memoranda, the proceedings of *ayuntamientos* and early departmental *juntas*, with other records of a primitive and superstitious people, have been my inadequate authorities. It is but just to state, however, that, though this particular story lacks corroboration, in ransacking the Spanish archives of Upper California I have met with many more surprising and incredible stories, attested and supported to a degree that would have placed this legend beyond a cavil or doubt. I have, also, never lost faith in the legend myself, and in so doing have profited much from the examples of divers

grant-claimants, who have often jostled me in their more practical researches, and who have my sincere sympathy at the skepticism of a modern hard-headed and practical world.

For many years after Father Junipero Serro first rang his bell in the wilderness of Upper California, the spirit which animated that adventurous priest did not wane. The conversion of the heathen went on rapidly in the establishment of Missions throughout the land. So sedulously did the good Fathers set about their work, that around their isolated chapels there presently arose *adobe* huts, whose mud-plastered and savage tenants partook regularly of the provisions, and occasionally of the Sacrament, of their pious hosts. Nay, so great was their progress, that one zealous Padre is reported to have administered the Lord's Supper one Sabbath morning to "over three hundred heathen Salvages." It was not to be wondered that the Enemy of Souls, being greatly incensed thereat, and alarmed at his decreasing popularity, should have grievously tempted and embarrassed these Holy Fathers, as we shall presently see.

Yet they were happy, peaceful days for California. The vagrant keels of prying Commerce had not, as yet, ruffled the lordly gravity of her bays. No torn and ragged gulch betrayed the suspicion of golden treasure. The wild oats drooped idly in the morning heat, or wrestled with the afternoon breezes. Deer and antelope dotted the plain. The water-courses brawled in their familiar channels, nor dreamed of ever shifting their regular tide. The wonders of the Yo-Semite and Calaveras were as yet unrecorded. The Holy Fathers noted little of the landscape beyond the barbaric prodigality with which the quick soil repaid the sowing. A new conversion, the advent of a Saint's day, or the baptism of an Indian baby, was at once the chronicle and marvel of their day.

At this blissful epoch, there lived, at the Mission of San Pablo, Father José Antonio Haro, a worthy brother of the Society of Jesus. He was of tall and cadaverous aspect. A somewhat romantic history had given a poetic interest to his lugubrious visage. While a youth, pursuing his studies at famous Salamanca, he had become enamored of the charms of Doña Cármen de Torrencevara, as that lady passed to her matutinal devotions. Untoward circumstances, hastened, perhaps, by a wealthier suitor, brought this amour to a disastrous issue; and Father José entered a monastery, taking upon himself the vows of celibacy. It was here that his natural fervor and poetic enthusiasm conceived expression as a missionary. A longing to convert the uncivilized heathen succeeded his frivolous earthly passion, and a desire to explore and develop unknown fastnesses continually possessed him. In his flashing eye and sombre exterior was detected a singular commingling of the discreet Las Casas and the impetuous Balboa.

Fired by this pious zeal, Father José went forward in the van of Christian pioneers. On reaching Mexico, he obtained authority to establish the Mission of San Pablo. Like the good Junipero, accompanied only by an acolyth and muleteer, he unsaddled his mules in a dusky *cañon*, and rang his bell in the wilderness. The savages — a peaceful, inoffensive, and inferior race — presently flocked around him. The nearest military post was far away, which contributed much to the security of these pious pilgrims, who found their open trustfulness and amiability better fitted to repress hostility than the presence of an armed, suspicious, and brawling soldiery. So the good Father José said matins and prime, mass and vespers, in the heart of Sin and Heathenism, taking no heed to himself, but looking only to the welfare of the Holy Church. Conversions soon followed, and, on the 7th of July, 1760, the first Indian baby was baptized, — an event which, as Father José piously records, "exceeds the richnesse of gold or precious jewels or

the chancing upon the Ophir of Solomon." I quote this incident as best suited to show the ingenuous blending of poetry and piety which distinguished Father José's record.

The Mission of San Pablo progressed and prospered until the pious founder thereof, like the infidel Alexander, might have wept that there were no more heathen worlds to conquer. But his ardent and enthusiastic spirit could not long brook an idleness that seemed begotten of sin; and one pleasant August morning, in the year of grace 1770, Father José issued from the outer court of the Mission building, equipped to explore the field for new missionary labors.

Nothing could exceed the quiet gravity and unpretentiousness of the little cavalcade. First rode a stout muleteer, leading a pack-mule laden with the provisions of the party, together with a few cheap crucifixes and hawks' bells. After him came the devout Padre José, bearing his breviary and cross, with a black *serapa* thrown around his shoulders; while on either side trotted a dusky convert, anxious to show a proper sense of their regeneration by acting as guides into the wilds of their heathen brethren. Their new condition was agreeably shown by the absence of the usual mud-plaster, which in their unconverted state they assumed to keep away vermin and cold. The morning was bright and propitious. Before their departure, mass had been said in the chapel, and the protection of St. Ignatius invoked against all contingent evils, but especially against bears, which, like the fiery dragons of old, seemed to cherish an unconquerable hostility to the Holy Church.

As they wound through the *cañon*, charming birds disported upon boughs and sprays, and sober quails piped from the alders; the willowy water-courses gave a musical utterance, and the long grass whispered on the hill-side. On entering the deeper defiles, above them towered dark green masses of pine, and occasionally the *madroño* shook its bright scarlet berries. As they toiled up many a steep ascent, Father José sometimes picked up fragments of scoria, which spake to his imagination of direful volcanoes and impending earthquakes. To the less scientific mind of the muleteer Ignacio they had even a more terrifying significance; and he once or twice snuffed the air suspiciously, and declared that it smelt of sulphur. So the first day of their journey wore away, and at night they encamped without having met a single heathen face.

It was on this night that the Enemy of Souls appeared to Ignacio in an appalling form. He had retired to a secluded part of the camp, and had sunk upon his knees in prayerful meditation, when he looked up and perceived the Arch-Fiend in the likeness of a monstrous bear. The Evil One was seated on his hind legs immediately before him, with his fore paws joined together just below his black muzzle. Wisely conceiving this remarkable attitude to be in mockery and derision of his devotions, the worthy muleteer was transported with fury. Seizing an arquebuse, he instantly closed his eyes and fired. When he had recovered from the effects of the terrible discharge, the apparition had disappeared. Father José, awakened by the report, reached the spot only in time to chide the muleteer for wasting powder and ball in a contest with one whom a single *ave* would have been sufficient to utterly discomfit. What further reliance he placed on Ignacio's story is not known; but, in commemoration of a worthy Californian custom, the place was called *La Cañada de la Tentacion del Pio Muletero*, or "The Glen of the Temptation of the Pious Muleteer," a name which it retains to this day.

The next morning, the party, issuing from a narrow gorge, came upon a long valley, sear and burnt with the shadeless heat. Its lower extremity was lost in a fading line of low hills, which, gathering might and volume toward the upper end of the valley, upheaved a stupendous bulwark against the breezy North. The peak of this awful spur was

just touched by a fleecy cloud that shifted to and fro like a banneret. Father José gazed with mingled awe and admiration. By a singular coincidence, the muleteer Ignacio uttered the simple ejaculation, "*Diablo!*"

As they penetrated the valley, they soon began to miss the agreeable life and companionable echoes of the *cañon* they had quitted. Huge fissures in the parched soil seemed to gape as with thirsty mouths. A few squirrels darted from the earth, and disappeared as mysteriously before the jingling mules. A gray wolf trotted leisurely along just ahead. But whichever way Father José turned, the mountain always asserted itself and arrested his wandering eye. Out of the dry and arid valley, it seemed to spring into cooler and bracing life. Deep cavernous shadows dwelt along its base; rocky fastnesses appeared midway of its elevation; and on either side huge black hills diverged like massy roots from a central trunk. His lively fancy pictured these hills peopled with a majestic and intelligent race of savages; and looking into futurity, he already saw a monstrous cross crowning the dome-like summit. Far different were the sensations of the muleteer, who saw in those awful solitudes only fiery dragons, colossal bears, and break-neck trails. The converts, Concepcion and Incarnacion, trotting modestly beside the Padre, recognized, perhaps, some manifestation of their former weird mythology.

At nightfall they reached the base of the mountain. Here Father José unpacked his mules, said vespers, and, formally ringing his bell, called upon the Gentiles within hearing to come and accept the Holy Faith. The echoes of the black frowning hills around him caught up the pious invitation, and repeated it at intervals; but no Gentiles appeared that night. Nor were the devotions of the muleteer again disturbed, although he afterward asserted, that, when the Father's exhortation was ended, a mocking peal of laughter came from the mountain. Nothing daunted by these intimations of the near hostility of the Evil One, Father José declared his intention to ascend the mountain at early dawn; and before the sun rose the next morning he was leading the way.

The ascent was in many places difficult and dangerous. Huge fragments of rock often lay across the trail, and after a few hours' climbing they were forced to leave their mules in a little gully, and continue the ascent afoot. Unaccustomed to such exertion, Father José often stopped to wipe the perspiration from his thin cheeks. As the day wore on, a strange silence oppressed them. Except the occasional pattering of a squirrel, or a rustling in the *chimisal* bushes, there were no signs of life. The half-human print of a bear's foot sometimes appeared before them, at which Ignacio always crossed himself piously. The eye was sometimes cheated by a dripping from the rocks, which on closer inspection proved to be a resinous oily liquid with an abominable sulphurous smell. When they were within a short distance of the summit, the discreet Ignacio, selecting a sheltered nook for the camp, slipped aside and busied himself in preparations for the evening, leaving the Holy Father to continue the ascent alone. Never was there a more thoughtless act of prudence, never a more imprudent piece of caution. Without noticing the desertion, buried in pious reflection, Father José pushed mechanically on, and, reaching the summit, cast himself down and gazed upon the prospect.

Below him lay a succession of valleys opening into each other like gentle lakes, until they were lost to the southward. Westerly the distant range hid the bosky *cañada* which sheltered the Mission of San Pablo. In the farther distance the Pacific Ocean stretched away, bearing a cloud of fog upon its bosom, which crept through the entrance of the bay, and rolled thickly between him and the North. Eastward, the same fog hid the base of the mountain and the view beyond. Still, from time to time the fleecy veil

parted, and timidly disclosed charming glimpses of mighty rivers, mountain-defiles, and rolling plains, sear with ripened oats, and bathed in the glow of the setting sun. As Father José gazed, he was penetrated with a pious longing. Already his imagination, filled with enthusiastic conceptions, beheld all that vast expanse gathered under the mild sway of the Holy Faith, and peopled with zealous converts. Each little knoll in fancy became crowned with a chapel; from each dark *cañon* gleamed the white walls of a Mission building. Growing bolder in his enthusiasm, and looking farther into futurity, he beheld a new Spain rising on these savage shores. He already saw the spires of stately cathedrals, the domes of palaces, vineyards, gardens, and groves. Convents, half-hid among the hills, peeped from plantations of branching limes; and long processions of chanting nuns wound through the defiles. So completely was the good Father's conception of the future confounded with the past, that even in their choral strain the well-remembered accents of Cármen struck his ear. He was busied in these fanciful imaginings, when suddenly over that extended prospect the faint, distant tolling of a bell rang sadly out and died. It was the *Angelus*. Father José listened with superstitious exaltation. The Mission of San Pablo was far away, and the sound must have been some miraculous omen. But never before, to his enthusiastic sense, did the sweet seriousness of this angelic symbol come with such strange significance. With the last faint peal, his glowing fancy seemed to cool; the fog closed in below him, and the good Father remembered he had not had his supper. He had risen and was wrapping his *serapa* around him, when he perceived for the first time that he was not alone.

Nearly opposite, and where should have been the faithless Ignacio, a grave and decorous figure was seated. His appearance was that of an elderly *hidalgo*, dressed in mourning, with moustaches of iron-gray carefully waxed and twisted around a pair of lantern-jaws. The monstrous hat and prodigious feather, the enormous ruff and exaggerated trunk-hose, contrasting with a frame shrivelled and wizened, all belonged to a century previous. Yet Father José was not astonished. His adventurous life and poetic imagination, continually on the look-out for the marvellous, gave him a certain advantage over the practical and material minded. He instantly detected the diabolical quality of his visitant, and was prepared. With equal coolness and courtesy he met the cavalier's obeisance.

"I ask your pardon, Sir Priest," said the stranger, "for disturbing your meditations. Pleasant they must have been, and right fanciful, I imagine, when occasioned by so fair a prospect."

"Worldly, perhaps, Sir Devil,—for such I take you to be," said the Holy Father, as the stranger bowed his black plumes to the ground; "worldly, perhaps; for it hath pleased Heaven to retain even in our regenerated state much that pertaineth to the flesh, yet still, I trust, not without some speculation for the welfare of the Holy Church. In dwelling upon yon fair expanse, mine eyes have been graciously opened with prophetic inspiration, and the promise of the heathen as an inheritance hath marvellously recurred to me. For there can be none lack such diligence in the True Faith, but may see that even the conversion of these pitiful salvages hath a meaning. As the blessed St. Ignatius discreetly observes," continued Father José, clearing his throat and slightly elevating his voice, "'the heathen is given to the warriors of Christ, even as the pearls of rare discovery which gladden the hearts of shipmen.' Nay, I might say" ——

But here the stranger, who had been wrinkling his brows and twisting his moustaches with well-bred patience, took advantage of an oratorical pause to observe, —

"It grieves me, Sir Priest, to interrupt the current of your eloquence as discourteously as I have already broken

your meditations; but the day already waneth to night. I have matter of serious import to make with you, could I entreat your cautious consideration a few moments."

Father José hesitated. The temptation was great, and the prospect of acquiring some knowledge of the Great Enemy's plans not the least trifling object. And if the truth must be told, there was a certain decorum about the stranger that interested the Padre. Though well aware of the Protean shapes the Arch-Fiend could assume, and though free from the weaknesses of the flesh, Father José was not above the temptations of the spirit. Had the Devil appeared, as in the case of the pious St. Anthony, in the likeness of a comely damsel, the good Father, with his certain experience of the deceitful sex, would have whisked her away in the saying of a paternoster. But there was, added to the security of age, a grave sadness about the stranger, — a thoughtful consciousness as of being at a great moral disadvantage, — which at once decided him on a magnanimous course of conduct.

The stranger then proceeded to inform him, that he had been diligently observing the Holy Father's triumphs in the valley. That, far from being greatly exercised thereat, he had been only grieved to see so enthusiastic and chivalrous an antagonist wasting his zeal in a hopeless work. For, he observed, the issue of the great battle of Good and Evil had been otherwise settled, as he would presently show him. "It wants but a few moments of night," he continued, "and over this interval of twilight, as you know, I have been given complete control. Look to the West."

As the Padre turned, the stranger took his enormous hat from his head, and waved it three times before him. At each sweep of the prodigious feather, the fog grew thinner, until it melted impalpably away, and the former landscape returned, yet warm with the glowing sun. As Father José gazed, a strain of martial music arose from the valley, and, issuing from a deep *cañon*, the good Father beheld a long cavalcade of gallant cavaliers, habited like his companion. As they swept down the plain, they were joined by like processions, that slowly defiled from every ravine and *cañon* of the mysterious mountain. From time to time the peal of a trumpet swelled fitfully upon the breeze; the cross of Santiago glittered, and the royal banners of Castile and Aragon waved over the moving column. So they moved on solemnly toward the sea, where, in the distance, Father José saw stately caravels, bearing the same familiar banner, awaiting them. The good Padre gazed with conflicting emotions, and the serious voice of the stranger broke the silence.

"Thou hast beheld, Sir Priest, the fading footprints of adventurous Castile. Thou hast seen the declining glory of old Spain, — declining as yonder brilliant sun. The sceptre she hath wrested from the heathen is fast dropping from her decrepit and fleshless grasp. The children she hath fostered shall know her no longer. The soil she hath acquired shall be lost to her as irrevocably as she herself hath thrust the Moor from her own Granada."

The stranger paused, and his voice seemed broken by emotion; at the same time, Father José, whose sympathizing heart yearned toward the departing banners, cried, in poignant accents, —

"Farewell, ye gallant cavaliers and Christain soldiers! Farewell, thou, Nuñez de Balboa! thou, Alonzo de Ojeda! and thou, most venerable Las Casas! Farewell, and may Heaven prosper still the seed ye left behind!"

Then turning to the stranger, Father José beheld him gravely draw his pocket-handkerchief from the basket-hilt of his rapier, and apply it decorously to his eyes.

"Pardon this weakness, Sir Priest," said the cavalier, apologetically; "but these worthy gentlemen were ancient friends of mine, and have done me many a delicate service, — much more,

perchance, than these poor sables may signify," he added, with a grim gesture toward the mourning suit he wore.

Father José was too much preoccupied in reflection to notice the equivocal nature of this tribute, and, after a few moments' silence, said, as if continuing his thought, —

"But the seed they have planted shall thrive and prosper on this fruitful soil?"

As if answering the interrogatory, the stranger turned to the opposite direction, and, again waving his hat, said, in the same serious tone, —

"Look to the East!"

The Father turned, and, as the fog broke away before the waving plume, he saw that the sun was rising. Issuing with its bright beams through the passes of the snowy mountains beyond, appeared a strange and motley crew. Instead of the dark and romantic visages of his last phantom train, the Father beheld with strange concern the blue eyes and flaxen hair of a Saxon race. In place of martial airs and musical utterance, there rose upon the ear a strange din of harsh gutturals and singular sibilation. Instead of the decorous tread and stately mien of the cavaliers of the former vision, they came pushing, bustling, panting, and swaggering. And as they passed, the good Father noticed that giant trees were prostrated as with the breath of a tornado, and the bowels of the earth were torn and rent as with a convulsion. And Father José looked in vain for holy cross or Christian symbol; there was but one that seemed an ensign, and he crossed himself with holy horror as he perceived it bore the effigy of a bear!

"Who are these swaggering Ishmaelites?" he asked, with something of asperity in his tone.

The stranger was gravely silent.

"What do they here, with neither cross nor holy symbol?" he again demanded.

"Have you the courage to see, Sir Priest?" responded the stranger, quietly.

Father José felt his crucifix, as a lonely traveller might his rapier, and assented.

"Step under the shadow of my plume," said the stranger.

Father José stepped beside him, and they instantly sank through the earth.

When he opened his eyes, which had remained closed in prayerful meditation during his rapid descent, he found himself in a vast vault, bespangled overhead with luminous points like the starred firmament. It was also lighted by a yellow glow that seemed to proceed from a mighty sea or lake that occupied the centre of the chamber. Around this subterranean sea dusky figures flitted, bearing ladles filled with the yellow fluid, which they had replenished from its depths. From this lake diverging streams of the same mysterious flood penetrated like mighty rivers the cavernous distance. As they walked by the banks of this glittering Styx, Father José perceived how the liquid stream at certain places became solid. The ground was strewn with glittering flakes. One of these the Padre picked up and curiously examined. It was virgin gold.

An expression of discomfiture overcast the good Father's face at this discovery; but there was trace neither of malice nor satisfaction in the stranger's air, which was still of serious and fateful contemplation. When Father José recovered his equanimity, he said, bitterly, —

"This, then, Sir Devil, is your work! This is your deceitful lure for the weak souls of sinful nations! So would you replace the Christian grace of holy Spain!"

"This is what must be," returned the stranger, gloomily. "But listen, Sir Priest. It lies with you to avert the issue for a time. Leave me here in peace. Go back to Castile, and take with you your bells, your images, and your missions. Continue here, and you only precipitate results. Stay! promise me you will do this, and you shall not lack that which will render your old age an ornament

and blessing"; and the stranger motioned significantly to the lake.

It was here, the legend discreetly relates, that the Devil showed — as he always shows sooner or later — his cloven hoof. The worthy Padre, sorely perplexed by his threefold vision, and, if the truth must be told, a little nettled at this wresting away of the glory of holy Spanish discovery, had shown some hesitation. But the unlucky bribe of the Enemy of Souls touched his Castilian spirit. Starting back in deep disgust, he brandished his crucifix in the face of the unmasked Fiend, and, in a voice that made the dusky vault resound, cried, —

"Avaunt thee, Sathanas! Diabolus, I defy thee! What! wouldst thou bribe me,—me, a brother of the Sacred Society of the Holy Jesus, Licentiate of Cordova and Inquisitor of Guadalaxara? Thinkest thou to buy me with thy sordid treasure? Avaunt!"

What might have been the issue of this rupture, and how complete might have been the triumph of the Holy Father over the Arch-Fiend, who was recoiling aghast at these sacred titles and the flourishing symbol, we can never know, for at that moment the crucifix slipped through his fingers.

Scarcely had it touched the ground before Devil and Holy Father simultaneously cast themselves toward it. In the struggle they clenched, and the pious José, who was as much the superior of his antagonist in bodily as in spiritual strength, was about to treat the Great Adversary to a back somersault, when he suddenly felt the long nails of the stranger piercing his flesh. A new fear seized his heart, a numbing chillness crept through his body, and he struggled to free himself, but in vain. A strange roaring was in his ears; the lake and cavern danced before his eyes and vanished; and with a loud cry he sank senseless to the ground.

When he recovered his consciousness he was aware of a gentle swaying motion of his body. He opened his eyes, and saw that it was high noon, and that he was being carried in a litter through the valley. He felt stiff, and, looking down, perceived that his arm was tightly bandaged to his side.

He closed his eyes, and, after a few words of thankful prayer, thought how miraculously he had been preserved, and made a vow of candlesticks to the blessed Saint José. He then called in a faint voice, and presently the penitent Ignacio stood beside him.

The joy the poor fellow felt at his patron's returning consciousness for some time choked his utterance. He could only ejaculate, "A miracle! Blessed Saint José, he lives!" and kiss the Padre's bandaged hand. Father José, more intent on his last night's experience, waited for his emotion to subside, and then asked where he had been found.

"On the mountain, your Reverence, but a few *varas* from where he attacked you."

"How? — you saw him, then?" asked the Padre, in unfeigned astonishment.

"Saw him, your Reverence! Mother of God, I should think I did! And your Reverence shall see him too, if he ever comes again within range of Ignacio's arquebuse."

"What mean you, Ignacio?" said the Padre, sitting bolt-upright in his litter.

"Why, the bear, your Reverence, — the bear, Holy Father, who attacked your worshipful person while you were meditating on the top of yonder mountain."

"Ah!" said the Holy Father, lying down again. "Chut, child! I would be at peace."

When he reached the Mission, he was tenderly cared for, and in a few weeks was enabled to resume those duties from which, as will be seen, not even the machinations of the Evil One could divert him. The news of his physical disaster spread over the country; and a letter to the Bishop of Guadalaxara contained a confidential and detailed account of the

good Father's spiritual temptation. But in some way the story leaked out; and long after José was gathered to his fathers, his mysterious encounter formed the theme of thrilling and whispered narrative. The mountain was generally shunned. It is true that Señor Joaquin Pedrillo afterward located a grant near the base of the mountain; but as the Señora Pedrillo was known to be a termagant half-breed, the Señor was not supposed to be over-fastidious.

Such is the Legend of Monte del Diablo. As I said before, it may seem to lack essential corroboration. The discrepancy between the Father's narrative and the actual climax has given rise to some skepticism on the part of ingenious quibblers. All such I would simply refer to that part of the report of Señor Julio Serro, Sub-Prefect of San Pablo, before whom attest of the above was made. Touching this matter the worthy Prefect observes,—"That although the body of Father José doth show evidence of grievous confiict in the flesh, yet that is no proof that the Enemy of Souls, who could assume the figure of a decorous, elderly *caballero*, could not at the same time transform himself into a bear for his own vile purposes."

LIFE WITHOUT PRINCIPLE.

At a lyceum, not long since, I felt that the lecturer had chosen a theme too foreign to himself, and so failed to interest me as much as he might have done. He described things not in or near to his heart, but toward his extremities and superficies. There was, in this sense, no truly central or centralizing thought in the lecture. I would have had him deal with his privatest experience, as the poet does. The greatest compliment that was ever paid me was when one asked me what *I thought*, and attended to my answer. I am surprised, as well as delighted, when this happens, it is such a rare use he would make of me, as if he were acquainted with the tool. Commonly, if men want anything of me, it is only to know how many acres I make of their land, — since I am a surveyor, — or, at most, what trivial news I have burdened myself with. They never will go to law for my meat; they prefer the shell. A man once came a considerable distance to ask me to lecture on Slavery; but on conversing with him, I found that he and his clique expected seven-eighths of the lecture to be theirs, and only one-eighth mine; so I declined. I take it for granted, when I am invited to lecture anywhere, — for I have had a little experience in that business, — that there is a desire to hear what *I think* on some subject, though I may be the greatest fool in the country, — and not that I should say pleasant things merely, or such as the audience will assent to; and I resolve, accordingly, that I will give them a strong dose of myself. They have sent for me, and engaged to pay for me, and I am determined that they shall have me, though I bore them beyond all precedent.

So now I would say something similar to you, my readers. Since *you* are my readers, and I have not been much of a traveller, I will not talk about people a thousand miles off, but come as near home as I can. As the time is short, I will leave out all the flattery, and retain all the criticism.

Let us consider the way in which we spend our lives.

This world is a place of business. What an infinite bustle! I am awaked almost every night by the panting of the locomotive. It interrupts my dreams.